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<110> Ecopia BioSciences Inc
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<150> USSN 60/469,810

<151> 2003-05-13

<150> USSN 60/491,516

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 <212> PRT
 <213> Streptomyces aizunensis

<400> 2

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 Gln Arg Thr Gly Trp Gly Lys Ser Ala Val Tyr Phe Val Ala Thr Ala
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 Leu Leu Arg Arg Arg Gly Ser Gly Pro Thr Val Ile Ile Ser Pro Leu
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 Leu Ala Leu Met Arg Asn Gln Val Glu Ala Ala Ala Arg Ala Gly Ile
 85 90 95
 Gln Ala Arg Thr Ile Asn Ser Ala Asn Pro Glu Glu Trp Glu Thr Ile
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 Tyr Gly Glu Val Glu Arg Gly Glu Thr Asp Val Leu Leu Val Ser Pro
 115 120 125
 Glu Arg Leu Asn Ser Val Asp Phe Arg Asp Gln Val Leu Pro Lys Leu
 130 135 140
 Ala Ala Thr Thr Gly Leu Leu Val Val Asp Glu Ala His Cys Ile Ser
 145 150 155 160
 Asp Trp Gly His Asp Phe Arg Pro Asp Tyr Arg Arg Leu Arg Thr Met
 165 170 175
 Leu Ala Glu Leu Pro Glu Gly Val Pro Val Leu Ala Thr Thr Ala Thr
 180 185 190
 Ala Asn Ala Arg Val Thr Ala Asp Val Ala Glu Gln Leu Gly Thr His
 195 200 205
 Gly Glu His Ala Leu Val Leu Arg Gly Pro Leu Asp Arg Glu Ser Leu
 210 215 220
 Arg Leu Gly Val Leu Gln Leu Pro Asp Ala Ala His Arg Leu Ala Trp
 225 230 235 240

Leu Gly Asp Arg Leu Ala His Leu Pro Gly Ser Gly Ile Ile Tyr Thr
 245 250 255
 Leu Thr Val Ala Ala Ala Glu Glu Val Ala Ala Phe Leu Arg Gln Arg
 260 265 270
 Gly Tyr Pro Val Ala Ser Tyr Thr Gly Lys Thr Glu Asn Ala Asp Arg
 275 280 285
 Leu Gln Ala Glu Glu Asp Leu Leu Ala Asn Arg Val Lys Ala Leu Val
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 Ala Thr Ser Ala Leu Gly Met Gly Phe Asp Lys Pro Asp Leu Gly Phe
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 Val Val His Met Gly Ser Pro Ser Ser Pro Ile Ala Tyr Tyr Gln Gln
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 420 425 430
 Thr Tyr Asp Ala Glu Arg Tyr Ala Trp Val Ala Lys Gln Arg Ala Ala
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 Glu Gln Gln Ala Met Arg Asp Tyr Val Ala Thr Thr Gly Cys Arg Met
 450 455 460
 Glu Phe Leu Gln Arg Gln Leu Asp Asp Glu Lys Ala Val Pro Cys Gly
 465 470 475 480
 Arg Cys Asp Asn Cys Ala Gly Ser Trp Leu Glu Ala Val Val Ser Pro
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 Ala Ala Leu Ala Ala Ala Ala Gly Glu Leu Asp Arg Ala Gly Val Glu
 500 505 510
 Val Glu Ser Arg Lys Met Trp Pro Thr Gly Leu Ala Ala Val Gly Met
 515 520 525
 Asp Leu Lys Gly Arg Ile Pro Ala Gly Gln Gln Ala Val Thr Gly Arg
 530 535 540
 Ala Leu Gly Arg Leu Ser Asp Ile Gly Trp Gly Asn Arg Leu Arg Pro
 545 550 555 560

Leu Leu Ser Ala Gln Ala Ala Asp Gly Pro Val Pro Asp Asp Val Leu
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 Ala Ala Val Val Thr Val Leu Ala Asp Trp Ala Arg Ser Pro Gly Gly
 580 585 590
 Trp Ala Ser Gly Gly Pro Asp Ala Met Ala Arg Pro Val Gly Ile Val
 595 600 605
 Ala Met Pro Ser Arg Thr Arg Pro Arg Leu Val Ala Ser Leu Ala Glu
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 Gly Val Ala Arg Val Gly Arg Leu Pro Leu Leu Gly Ser Leu Ala Tyr
 625 630 635 640
 Thr Pro Gln Ala Asp Val Tyr Gly Ala His Arg Ser Asn Ser Ala Gln
 645 650 655
 Arg Leu Arg Ala Leu Ala Asp Ser Phe Thr Val Pro Glu Glu Leu Ala
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 Ala Ala Leu Ala Ala Ala Pro Gly Pro Val Leu Leu Val Asp Asp Tyr
 675 680 685
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 <213> Streptomyces aizunensis

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<212> PRT
<213> Streptomyces aizunensis

<400> 4

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Val	Leu	Ser	Val	Gln	Tyr	Pro	Gly	Arg	Gln	Asp	Arg	Arg	Asp	Glu	Pro				
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Gly	Ile	Val	Asp	Ile	Gly	Ala	Tyr	Ala	Asp	Ala	Leu	Thr	Glu	Gln	Leu				
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Val	Pro	Trp	Leu	Asp	Arg	Pro	Leu	Ala	Phe	Phe	Gly	His	Ser	Met	Gly				
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Ala	Ile	Leu	Ala	Phe	Glu	Val	Thr	Arg	Arg	Leu	Glu	Arg	Asp	His	Gly				
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Val	Thr	Pro	Glu	His	Ile	Phe	Ala	Ser	Gly	Arg	Arg	Ser	Pro	Ala	Ser				
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Phe	Arg	His	Glu	Thr	Val	His	Leu	Arg	Asp	Asp	Asp	Gly	Ile	Val	Ala				
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Glu	Met	Arg	Glu	Leu	Ser	Gly	Thr	Asp	Ala	Lys	Ile	Leu	Gly	Asn	Glu				
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Glu	Ile	Leu	Arg	Met	Val	Leu	Pro	Ala	Ile	Arg	Ser	Asp	Tyr	Thr	Ala				
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Ile	Glu	Asn	Tyr	Arg	Ala	Ala	Pro	Glu	Asp	Val	Val	Arg	Thr	Pro	Ile				
			180					185						190					
Thr	Val	Leu	Thr	Gly	Asp	Ala	Asp	Pro	Arg	Thr	Ser	Arg	Glu	Glu	Ala				
		195					200						205						
Asp	Ala	Trp	Lys	Ala	His	Thr	Thr	Gly	Gly	Phe	Asp	Leu	His	Ser	Phe				
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Pro	Gly	Gly	His	Phe	Phe	Leu	Ala	Asn	His	Gln	Glu	Lys	Ile	Met	Gly				
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<211> 762

<212> DNA

<213> Streptomyces aizunensis

<400> 5

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cagtcgctgg ctccggcgat ggacgtcctc tcggctcagt accccggcag gcaggaccgc 180

agggacgagc ccgggatcgt ggacatcggc gcctacgagg acgccctgac cgagcaactc 240

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 ccgaggacca gccgggaaga ggcggacgcc tggaagggcg acacgaccgg cggattcgat 660
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 <211> 956
 <212> PRT
 <213> Streptomyces aizunensis

<400> 6

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 35 40 45
 Glu Glu Ala Ile Ser Ala Gly Ala Leu Val Leu Glu Ala Thr Gly Ser
 50 55 60
 Arg Ala Glu Arg Tyr Leu Pro Phe Gly Ile Leu Arg Arg Ile Leu Asp
 65 70 75 80
 Ser Ala Ala Pro Leu Ser Pro Glu Ile His Ala Tyr Ala Thr Glu Leu
 85 90 95
 Leu Asp Arg Val Ser Ala Gly Thr Thr Asp Ala Glu Gly Ala Val Glu
 100 105 110
 Ala Gly Met Arg Val Leu Pro His Val Ala Thr Ala Leu Leu Arg Ile
 115 120 125
 Ala Arg Asn Arg Thr Val Val Ile Ala Ile Asp Asp Val His His Gly
 130 135 140
 Asp Glu Leu Ser Leu Ala Phe Leu Leu Cys Leu Ala Arg Arg Val Arg
 145 150 155 160
 Gln Ala Gly Val Leu Ile Val Leu Thr Glu Ala Val Arg Leu Arg Ser
 165 170 175
 Ala Gln Leu Ala Phe His Ala Glu Leu Gln Arg Gln Pro Asn Cys Thr
 180 185 190

Ser Leu Arg Leu Pro Leu Leu Thr Thr Arg Gly Thr Thr Arg Val Leu
 195 200 205

Ala Glu His Phe Ser Pro Ser Thr Ala Gln Arg Leu Ser Ala Glu Cys
 210 215 220

Gln Glu Thr Thr Gly Gly Asn Pro Leu Leu Val Arg Ala Leu Ile Asp
 225 230 235 240

Asp Gly Leu Thr Ala Leu Gly Asp Ser Glu Pro Phe Gln Arg Leu Ala
 245 250 255

Pro Ala Glu Thr Phe Glu Arg Ala Val Leu Asp Cys Leu His Arg Gly
 260 265 270

Asp Pro Glu Leu Leu Thr Val Ala Arg Gly Val Ala Val Leu Gly Ser
 275 280 285

Ala Cys Ser Leu Ala Leu Leu Asn Gly Ile Val Asp Leu His Ala Lys
 290 295 300

Ala Thr Glu Gln Ala Leu Gln Asp Leu Ser Arg Cys Ala Val Leu His
 305 310 315 320

His Gly Ser Phe Arg Asp Pro Ala Ala Arg Thr Ala Val Leu Glu Ala
 325 330 335

Thr Pro Pro Ala Ala Leu Ser Ala Leu His Leu Arg Thr Ala Arg Leu
 340 345 350

Leu His Gln Glu Gly Ala Thr Ala Leu Asp Val Ala Arg His Leu Leu
 355 360 365

Ala Ala Arg Lys Asn Val Glu Asp Trp Ala Ile Pro Val Leu Gln Glu
 370 375 380

Ala Val Glu Tyr Ala Leu Val Glu Asp Glu His Glu Leu Ala Leu Arg
 385 390 395 400

Cys Gly Glu Leu Ala Val Ala Ser Cys Ala Glu Gly Pro Arg His Ala
 405 410 415

Ala Leu Lys Ser Arg Leu Ala Ser Ile Val Trp Arg Ser Ser Pro Ala
 420 425 430

Ala Ala Glu Gly His Leu Arg Gln Leu Ser Arg Glu Leu Ala Ala Gly
 435 440 445

Arg Leu Ala Asp Arg Asp Leu Val Gln Ala Val Ser Leu Leu Ala Trp
 450 455 460

Met Gly Glu Ser Arg Gly Ala Gly Glu Ala Val Leu Arg Leu Gln Arg
 465 470 475 480

Thr Asp Ser Glu Ala Glu Ala Ala Gly Arg Ala Pro Ala Tyr Asp Pro
 485 490 495

Gly Thr Leu Thr Ala Ala Gln Ser Trp Leu Ser Met Val Ser Pro Pro
 500 505 510

Ala Arg Asp Leu Phe Asp Ala Val Glu Pro Arg Arg Thr Thr Leu Ser
515 520 525
Gly Ala Pro Gly Ala Leu Pro Gly Ala Gly Pro Asp Thr Val Pro Tyr
530 535 540
Asp Met Pro Asp Asn Ala Tyr Val Gln Ala Ala Asp Ala Val Arg Thr
545 550 555 560
Ala Leu Arg Gly Gly Thr Gln Ala Asp Ala Ala Val Ser Lys Ala Thr
565 570 575
Arg Val Leu Gln Arg Tyr His Leu Ser Asp Arg Thr Leu Gln Pro Leu
580 585 590
Val Phe Ala Leu Leu Ala Val Ile Tyr Ala Gly Arg Leu Asp Leu Ala
595 600 605
Ser Ala Trp Cys Glu Arg Leu Leu Gly Glu Cys Ser Ala Arg Asn Ala
610 615 620
Pro Thr Trp Gln Ala Ala Leu Gly Val Val Arg Ala Glu Ile Leu Leu
625 630 635 640
Arg Gln Gly Asp Leu Pro Gly Ala Ala Ala Gln Ala Arg His Ala Met
645 650 655
Ser Arg Ile Ser Leu Gln Ser Trp Gly Val Gly Ile Ala Leu Pro Leu
660 665 670
Ala Val Leu Val Glu Ala Glu Val Gln Met Gly Asp His Glu Glu Ala
675 680 685
Met Ser Leu Leu Glu Gln Pro Val Pro Gln Ala Met Phe Asp Thr Leu
690 695 700
Ala Gly Leu His Tyr Leu Arg Ala Arg Gly Arg Cys His Leu Ala Thr
705 710 715 720
Gly Arg Tyr His Ala Ala Val Arg Asp Phe Leu Asn Cys Gly Glu Leu
725 730 735
Met Gln Ala Trp Gly Val Asp Gly Ala Glu Leu Val Pro Trp Arg Leu
740 745 750
Asp Ala Ala Glu Ala Trp Leu Ala Leu Gly Asn Val Ala Arg Ala Lys
755 760 765
Glu Tyr Thr Glu Gln Gln Lys Gln Arg Glu Thr Gly Pro Val Gly Ser
770 775 780
Arg Thr Arg Gly Ser Leu Leu Leu Thr Leu Ala His Thr Gly Gly Asp
785 790 795 800
Leu Thr Val Arg Leu Lys Arg Leu Val Glu Ala Val Glu Thr Leu Glu
805 810 815
Glu Gly Gly Asp Arg Leu Gln Leu Ala Val Ala Leu Gly Glu Leu Gly
820 825 830

Arg Gly Tyr Arg Ala Leu Gly Asp Phe Asn Arg Ala Arg Met Leu Val
 835 840 845
 Arg Lys Ala Trp His Val Ala Lys Ser Cys Gly Ala Glu Pro Leu Cys
 850 855 860
 Gln Gln Phe Met Pro Gly Gln Val Asp Gly Glu Ala Gly Ala Gln Ser
 865 870 875 880
 Gly Arg Glu Ala Glu Leu Pro Ser Glu Val Glu Val Leu Ser Glu Ala
 885 890 895
 Glu Ala Arg Val Ala Leu Leu Ala Ala Arg Gly His Thr Asn Arg Glu
 900 905 910
 Ile Ala Thr Lys Leu Tyr Val Thr Val Ser Thr Val Glu Gln His Leu
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 <212> DNA
 <213> Streptomyces aizunensis

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<210> 8
 <211> 201
 <212> PRT
 <213> Streptomyces aizunensis

<400> 8

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 35 40 45
 Leu Asp Leu Gln Met Gly Gly Met Asp Gly Val Glu Thr Thr Gly His
 50 55 60
 Leu Leu Arg Val Ala Pro Ala Thr Lys Val Val Ile Val Thr Thr Tyr
 65 70 75 80
 Glu Ser Asp Thr Asp Ile Leu Arg Ala Val Glu Ala Gly Ala Ala Gly
 85 90 95
 Tyr Leu Leu Lys Gly Ser Ser Arg Asp Glu Leu Val Gln Ala Val Lys
 100 105 110
 Ala Ala Ala Arg Gly Glu Thr Val Leu Thr Pro Ser Leu Ala Pro Lys
 115 120 125
 Leu Phe Arg Ala Arg Val Val Glu Pro Pro Ala Leu Ser Asp Arg Glu
 130 135 140
 Arg Glu Val Leu Gln Leu Val Ser Leu Gly Leu Thr Asn Ala Asp Ile
 145 150 155 160
 Gly Arg Gln Leu Phe Ile Ser Glu Ala Thr Val Lys Thr His Leu Leu
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 Arg Ser Phe Lys Lys Leu Ser Val Ser Asp Arg Thr Ala Ala Val Ile
 180 185 190
 Thr Ala Leu Lys Leu Gly Leu Leu Ser
 195 200

<210> 9
 <211> 606
 <212> DNA
 <213> Streptomyces aizunensis

<400> 9

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gagagcgaca cggacatcct gcgggcccgtg gaggcgggcg cggcgggcta cctgctcaag 300
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tcctga 606

<210> 10
<211> 416
<212> PRT
<213> Streptomyces aizunensis

<400> 10

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20 25 30
Ala Val Ser Tyr Ala Val Thr Thr Met Leu Leu Phe Thr Ser Asp Gly
35 40 45
Glu Gln Val His Arg Ala Val Ala Met Ala Ala Leu Thr Ala Ala Val
50 55 60
Pro Trp Tyr Ala Ala Leu Gly Arg Ser Thr Met Val His Glu Gly Gln
65 70 75 80
Gly Pro Val Arg Arg Ser Val Val Phe Ser Val Gly Leu Phe Val Leu
85 90 95
Phe Ala Val Ala Val Val Phe Asp Leu Ala Ala Ser Phe Ala Leu Phe
100 105 110
Ala Val Val Pro Met Leu Met Met Ser Leu Ala Thr Ser Pro Ala Ile
115 120 125
Ala Val Val Thr Leu Ala Asn Leu Val Pro Val Ile Val Val Trp Leu
130 135 140
Arg Gly Gly Thr Leu Ser Arg Asp Ile Leu Ala Val Leu Pro Thr Ser
145 150 155 160
Leu Leu Gly Ile Ala Leu Ser Val Met Leu Gly Leu Trp Ile Thr Arg

	165		170		175
Val Thr Arg	Gln Ser Arg Asp Arg Ala	Glu Leu Ile	Glu Leu His		
	180	185	190		
Arg Asn Arg	Ala Gln Val Ala Arg Leu Ser Arg Lys	Ala Gly Val Ser			
	195	200	205		
Ala Glu Arg	Glu Arg Leu Ala Arg Glu Ile His Asp Thr	Leu Ala Gln			
	210	215	220		
Gly Leu Thr	Ser Ile Ile Ser Leu Val Gln Ala Ala Glu Thr Asp Phe				
225	230	235	240		
Thr Ala Asp	Pro Asp Arg Ala Arg Ala His Leu Ala Leu Ala Gly Arg				
	245	250	255		
Val Ala Arg	Glu Ser Leu Gly Glu Ala Arg Glu Phe Val Thr Glu Leu				
	260	265	270		
Thr Pro Pro	Ala Leu Gln Glu Ser Ser Leu Val Gln Ala Thr Arg Arg				
	275	280	285		
Gln Ala Glu	Gly Leu Thr Ala Gln Thr Gly Met Arg Ala His Val Thr				
	290	295	300		
Val Glu Gly	Asp Glu Arg Glu Leu Pro Met Ala Ile Ser Val Val Leu				
305	310	315	320		
Leu Arg Ser	Leu Gln Glu Ala Ile Ala Asn Ile Arg Lys His Ala Gly				
	325	330	335		
Lys Ala Arg	Ala Ala Glu Ile Arg Leu Val Tyr Glu Gln Asp Thr Val				
	340	345	350		
Arg Leu Leu	Val Arg Asp Asp Gly Pro Gly Phe Thr Val Thr Gly Asp				
	355	360	365		
Gln Arg Gly	Ser Gly Leu Arg Gly Met Gln Thr Arg Ala His Glu Ile				
	370	375	380		
Ser Gly Ala	Ala Thr Val Val Ser Ser Pro Gly Gln Gly Thr Thr Ile				
385	390	395	400		
Glu Val Thr	Val Pro Val Pro Ala Lys Gly Glu Glu Ala Asp Glu Arg				
	405	410	415		

<210> 11

<211> 1251

<212> DNA

<213> Streptomyces aizunensis

<400> 11

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atgctgctgt tcacctccga cggatgaacag gtccaccggg ccgtggccat ggccgctg 180

accgcccgcg tgcctggta cgcggccctg gggcgcagca ccatgggtcca cgagggccag 240

gggcccgctcc ggcgcagcgt cgtcttctcc gtcggcctgt tcgtgctggt cgcgggtggcc 300
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 gcgcacgtca ccgtcgaagg agacgagcgg gaactgccga tggcgatcag cgtggtcctg 960
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 cccgggttca ccgtcaccgg ggaccagcgg ggaagcgggc tgcgcggcat gcagactcgc 1140
 gcacacgaga tcagcggggc ggcgaccgtg gtcagcagcc ccggacaggg caccaccatc 1200
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<210> 12
 <211> 186
 <212> PRT
 <213> Streptomyces aizunensis

<400> 12

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 Met Leu Pro Ser Leu Leu Ala Val Val Val Ile Leu Ala Leu Leu Val
 35 40 45
 His Thr Leu Pro Leu Asp Gly Asn Asp Pro Ser Leu Gln Leu Ala Gly
 50 55 60
 Ile Gly Ala Gly Ile Ile Cys Gly Leu Ala Ala Thr Ala Leu Leu Pro
 65 70 75 80
 Ala His Arg Asn Ala Ser Gly Glu Val Ser Thr Lys Gly Gly Ile Gly
 85 90 95

Tyr Ala Leu Val Trp Thr Ala Leu Ser Ala Ser Arg Val Leu Phe Ala
 100 105 110
 Tyr Gly Ser Gln His Trp Phe Ser Glu Gly Ile Val Arg Phe Ser Thr
 115 120 125
 Asp Tyr Lys Leu Ser Gly Gln Ala Val Tyr Ser Asn Ala Phe Ala Phe
 130 135 140
 Met Ala Leu Ala Met Val Leu Thr Arg Thr Ala Val Leu Leu Asn Thr
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 Arg Arg Arg Leu Arg Gly Gly Gln Leu Pro Ala Ala Asp Asn Thr Ala
 165 170 175
 Pro His Gln Ala Ser Ser Ala Asn Thr His
 180 185

<210> 13
 <211> 561
 <212> DNA
 <213> Streptomyces aizunensis

<400> 13
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 gtcgtgatcc tcgcgctcct cgtgacacaca ctgccgctcg acggcaacga cccctcgctc 180
 caactggcgg gcateggcgc cggtatcatc tgcggactgg ccgccacggc gctcctcccc 240
 gccaccgga acgcttcgg tgaggctctcc accaagggcg gtatcgggta .cgcgctggtg 300
 tggaccgcgc tgtccgctc gcgtgtgctc ttcgctacg gttcacagca ctggttcagc 360
 gagggcatcg tccggttcag caccgactac aagctcagcg gacaggccgt ctactccaac 420
 gctttcgctc tcatggcctt ggccatggtg ctgacgcgga ccgccgtcct gttgaacacg 480
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 agttccgcca atacgactg a 561

<210> 14
 <211> 163
 <212> PRT
 <213> Streptomyces aizunensis

<400> 14
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 20 25 30
 Pro Ile Thr Phe Gly Val Leu Tyr Leu Cys Ile Pro Pro Ala Arg Pro

	35		40		45										
Phe	Phe	Gly	Trp	Ala	Phe	Leu	Ile	Ser	Leu	Val	Pro	Gly	Leu	Ala	Tyr
	50					55					60				
Met	Ala	Val	Met	Pro	Ala	Trp	Arg	Tyr	Arg	Val	His	Arg	Trp	Glu	Thr
65					70					75					80
Thr	Asp	Glu	Ala	Val	Tyr	Ala	Ala	Ser	Gly	Trp	Leu	Trp	Gln	Gln	Trp
				85					90					95	
Arg	Val	Val	Pro	Met	Ser	Arg	Ile	Gln	Thr	Val	Asp	Thr	Leu	Arg	Gly
			100					105					110		
Pro	Leu	Gln	Gln	Leu	Phe	Gly	Leu	Ser	Gly	Ile	Thr	Val	Thr	Thr	Ala
		115					120					125			
Ser	Tyr	Ser	Gly	Ala	Val	Lys	Ile	Lys	Gly	Ile	Asp	His	Arg	Thr	Ala
	130					135					140				
Arg	Asp	Val	Val	Glu	His	Leu	Thr	Arg	Val	Thr	Gln	Ala	Thr	Pro	Gly
145					150					155					160
Asp	Ala	Thr													

<210> 15
 <211> 492
 <212> DNA
 <213> Streptomyces aizunensis

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 ctgtgcatcc cgcccgcag gccgttcttc ggctgggct tctgatctc gctcgtaccg 180
 ggcctcgcct acatggcct catgcccgcc tggcgctacc gggcgcaccg ttgggagacc 240
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 tccggcatca ccgtcaccac cgctcctac tccggcgccg tgaagatcaa ggaatcgac 420
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 gacgcgacat ga 492

<210> 16
 <211> 514
 <212> PRT
 <213> Streptomyces aizunensis

<400> 16
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20 25 30
Val Asn Leu Ser Met Leu Ala Gly Pro Leu Ala Leu Phe Ala Val Thr
35 40 45
Val Ala Leu Thr Gly Ala Asn Leu Gln Ala Leu Ile Ser Leu Gly Ser
50 55 60
Leu Leu Ile Val Phe Leu Val Ile Thr Gly Ile Ser Thr Met Arg Leu
65 70 75 80
Leu Thr Thr Arg Phe Arg Val Thr Ala Glu Arg Val Glu Leu Arg Ser
85 90 95
Gly Leu Leu Phe Arg Ser Arg Arg Ser Val Pro Ile Asp Arg Val Arg
100 105 110
Ser Val Asp Val Glu Ala Lys Pro Val His Arg Leu Phe Gly Leu Ala
115 120 125
Ser Leu Arg Ile Gly Thr Gly Glu Gln Gly Ala Ser Ser Arg Arg Leu
130 135 140
Ser Leu Asp Gly Ile Thr Arg Arg Gln Ala Arg Arg Leu Arg Arg Leu
145 150 155 160
Leu Ile Asp Arg Arg Gly Ser Gly His Ala Thr Gly Gln Asp Gln Asp
165 170 175
Val Thr Ile Ala Glu Met Asp Trp Ala Trp Leu Arg Tyr Ala Pro Leu
180 185 190
Thr Ile Trp Gly Val Gly Ser Val Phe Ala Ala Val Gly Thr Ala Tyr
195 200 205
Arg Ile Leu His Glu Met Lys Val Asp Pro Leu Glu Leu Gly Val Val
210 215 220
Lys Asp Ile Glu Asp Arg Phe Gly Ser Val Pro Leu Trp Phe Gly Ile
225 230 235 240
Leu Val Ala Val Val Ile Thr Ala Val Val Gly Ala Ala Val Ser Thr
245 250 255
Ala Thr Phe Val Asp Ala Trp Thr Asn Tyr Arg Leu Glu Arg Glu Gly
260 265 270
Val Gly Ile Phe Arg Ile Arg Arg Gly Leu Leu Ile Ser Arg Ser Val
275 280 285
Thr Ile Glu Glu Arg Arg Leu Arg Gly Val Glu Leu Ala Glu Pro Met
290 295 300
Leu Leu Arg Trp Ala Gly Gly Ala Thr Leu Ser Ala Ile Ala Ser Gly
305 310 315 320
Leu Ser Asn Ser Gln Glu Asn Arg Ser Arg Cys Ser Leu Thr Pro Pro
325 330 335

Val Pro Arg Asp Glu Ala Leu Arg Val Ala Ala Asp Val Leu Ala Glu
 340 345 350
 Glu Gly Ser Pro Thr Glu Leu Thr Lys Leu Val Arg His Ser Arg Ala
 355 360 365
 Ala Leu Arg Arg Arg Ile Asn Arg Gly Leu Leu Val Leu Ala Ala Val
 370 375 380
 Val Ala Val Pro Leu Gly Leu Gly Leu Trp Leu Thr Pro Val Leu Val
 385 390 395 400
 His Thr Ala Trp Ile Thr Ala Leu Val Gly Leu Pro Val Val Ile Val
 405 410 415
 Leu Ala Asn Asp Ala Tyr Arg Ser Leu Gly His Gly Ile Arg Asp Arg
 420 425 430
 Tyr Leu Val Val Arg Ala Gly Thr Phe Ala Arg Arg Thr Val Ala Val
 435 440 445
 Gln Arg Asp Gly Val Ile Gly Trp Asn Ile Ser Arg Ser Tyr Phe Gln
 450 455 460
 Arg Arg Ser Gly Leu Leu Thr Ile Gly Ala Thr Thr Ala Gly Val Gly
 465 470 475 480
 Cys His Lys Val Arg Asp Val Ser Val Gly Ala Gly Leu Ala Phe Ala
 485 490 495
 Glu Glu Ala Val Pro Arg Leu Leu Ala Pro Phe Ile Glu Arg Val Pro
 500 505 510

Arg Gly

<210> 17
 <211> 1545
 <212> DNA
 <213> Streptomyces aizunensis

 <400> 17
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 agccgcaggc tctccctcga cggcatcacc aggcgtcagg cgcggcgact gcgcaggctc 480
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gccgagccga	tgctgctg	ctggggcg	ggcgccacc	tgagcgccat	cgccagcggc	960
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<210> 18
 <211> 164051
 <212> DNA
 <213> *Streptomyces aizunensis*

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	acgaggacct	ccgcggagag	gtcgtcggcg	gtgccgagca	gaccggcacc	ccggtcccgt	180
	acggcctccg	cattgatgtg	acggctccgt	ccgtccggca	ggacgagctg	cggcacaccg	240
	gcgttcagcg	ccgccagcgt	cgccccgcga	ccaccgtgg	gcacggcccgc	gtcgcaggtc	300
	tgacgacg	ccgtcagcgg	caccacccc	acggcccgg	cggtgggagg	cagttcaccg	360
	agcgccgtgg	tgtccacata	gccagcgc	agcacgaact	cggcgtccac	cccggcagcc	420
	gccgcccgga	gccgctgcac	cgggcccagg	ccgttgatgt	ggaccgaggc	cgtgccgagc	480
	gtcaccccga	cccggcggcg	ccccggcttc	tccagcagcc	agtccggcag	caccgcaccg	540

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Ser	Arg	Leu	Val	Gly	Val	Leu	Ala	Gly	Ser	Gly	Glu	Asp	Gln	Val
1265						1270					1275			
Ala	Val	Arg	Ser	Ser	Gly	Val	Phe	Gly	Arg	Arg	Leu	Val	Arg	Ala
1280						1285					1290			
Pro	Arg	Ala	Glu	Gly	Ala	Ser	Ala	Trp	Ser	Pro	Thr	Gly	Thr	Val
1295						1300					1305			
Leu	Val	Thr	Gly	Gly	Thr	Gly	Val	Leu	Gly	Gly	Arg	Val	Ala	Arg
1310						1315					1320			
Trp	Leu	Ala	Gly	Ala	Gly	Ala	Glu	Arg	Leu	Val	Leu	Thr	Ser	Arg
1325						1330					1335			
Arg	Gly	Leu	Asp	Ala	Pro	Gly	Ala	Val	Glu	Leu	Val	Glu	Glu	Leu
1340						1345					1350			
Thr	Thr	Gly	Phe	Gly	Val	Glu	Val	Ser	Val	Val	Ala	Cys	Asp	Ala
1355						1360					1365			
Ala	Asp	Arg	Asp	Ala	Leu	Arg	Ala	Leu	Leu	Ser	Ala	Glu	Ala	Gly
1370						1375					1380			
Ser	Leu	Thr	Ala	Val	Val	His	Thr	Ala	Gly	Val	Leu	Asp	Asp	Gly
1385						1390					1395			
Val	Leu	Asp	Ala	Leu	Thr	Pro	Asp	Arg	Ile	Asp	Ser	Val	Val	Arg
1400						1405					1410			
Ala	Lys	Ala	Val	Ser	Ala	Leu	Asn	Leu	His	Glu	Leu	Thr	Ala	Glu
1415						1420					1425			
Leu	Gly	Ile	Glu	Leu	Ser	Asp	Phe	Val	Leu	Phe	Ser	Ser	Val	Thr
1430						1435					1440			
Gly	Thr	Val	Gly	Ala	Ala	Gly	Gln	Ala	Asn	Tyr	Ala	Ala	Ala	Asn
1445						1450					1455			
Ala	Phe	Leu	Asp	Ala	Leu	Ala	Glu	Gln	Arg	Arg	Ala	Asp	Gly	Leu
1460						1465					1470			
Ala	Ala	Thr	Ser	Ile	Ala	Trp	Gly	Pro	Trp	Ala	Glu	Gly	Gly	Met
1475						1480					1485			
Ala	Ala	Asp	Glu	Ala	Met	Asp	Ala	Arg	Met	Arg	Arg	Glu	Gly	Met
1490						1495					1500			
Pro	Pro	Met	Ala	Pro	Thr	Ser	Ala	Met	Ser	Ala	Leu	Glu	Gln	Ala
1505						1510					1515			
Val	Gly	Ala	Gly	Glu	Thr	Ala	Leu	Thr	Val	Ala	Asp	Ile	Asp	Trp
1520						1525					1530			
Glu	Arg	Phe	Ser	Ser	Val	Ile	Ala	Ala	Val	Arg	Pro	Asn	Pro	Leu
1535						1540					1545			
Ile	Gly	Asp	Phe	Val	Val	Gly	Ala	Glu	Gly	Thr	Ala	Ala	Ala	Ser
1550						1555					1560			

Gly	His	Gly	Ser	Val	Val	Thr	Gly	Ala	Asp	Val	Ala	Ala	Thr	Val
1565						1570					1575			
Ser	Gly	Arg	Leu	Ala	Gly	Leu	Thr	Gln	Ala	Glu	Gln	Glu	Arg	Glu
1580						1585					1590			
Leu	Leu	Ser	Leu	Val	Arg	Leu	His	Val	Ala	Ala	Val	Leu	Gly	His
1595						1600					1605			
Asp	Gly	Ser	Asp	Ala	Val	Gly	Ala	Glu	Arg	Ala	Phe	Lys	Glu	Leu
1610						1615					1620			
Gly	Phe	Asp	Ser	Leu	Thr	Ser	Val	Glu	Leu	Arg	Asn	Arg	Leu	Gly
1625						1630					1635			
Ala	Ala	Thr	Asp	Leu	Arg	Leu	Pro	Thr	Thr	Leu	Val	Tyr	Asp	Tyr
1640						1645					1650			
Pro	Thr	Ser	Ala	Ala	Leu	Ala	Glu	Tyr	Leu	Arg	Gly	Glu	Leu	Ala
1655						1660					1665			
Gly	Ser	Ala	Gln	Asp	Ala	Gly	Pro	Pro	Leu	Pro	Ala	Val	Val	Gly
1670						1675					1680			
Ser	Ala	Ala	Asp	Asp	Asp	Pro	Ile	Val	Ile	Val	Ser	Met	Ser	Cys
1685						1690					1695			
Arg	Phe	Pro	Gly	Gly	Val	Arg	Thr	Pro	Glu	Asp	Leu	Trp	Gln	Leu
1700						1705					1710			
Leu	Ala	Asp	Gly	Thr	Asp	Thr	Val	Ala	Ala	Phe	Pro	Ala	Asp	Arg
1715						1720					1725			
Gly	Trp	Asp	Leu	Asp	Gly	Leu	Tyr	Ser	Ala	Asp	Pro	Glu	Arg	Ser
1730						1735					1740			
Gly	Thr	Ser	Tyr	Thr	Arg	Glu	Gly	Gly	Phe	Leu	Tyr	Asp	Ala	Ala
1745						1750					1755			
Asp	Phe	Asp	Ala	Asp	Phe	Phe	Gly	Ile	Ser	Pro	Arg	Glu	Ala	Leu
1760						1765					1770			
Ala	Met	Asp	Pro	Gln	Gln	Arg	Leu	Leu	Leu	Glu	Thr	Ala	Trp	Glu
1775						1780					1785			
Thr	Phe	Glu	Arg	Ala	Gly	Ile	Asp	Pro	Ala	Ser	Leu	Arg	Gly	Ser
1790						1795					1800			
Gln	Ala	Gly	Val	Phe	Val	Gly	Thr	Asn	Gly	Gln	Asp	Tyr	Leu	Ser
1805						1810					1815			
Leu	Val	Thr	Arg	Glu	Gly	Asp	Gly	Leu	Asp	Gly	Leu	Glu	Gly	His
1820						1825					1830			
Val	Gly	Thr	Gly	Asn	Ala	Ala	Ser	Val	Val	Ser	Gly	Arg	Leu	Ser
1835						1840					1845			
Tyr	Val	Phe	Gly	Leu	Glu	Gly	Pro	Ala	Ile	Thr	Val	Asp	Thr	Ala
1850						1855					1860			

Cys Ser Ser Ser Leu Val Ala Leu His Leu Ala Val Gln Ala Leu
 1865 1870 1875
 Arg Gln Gly Glu Cys Thr Leu Ala Leu Ala Gly Gly Val Thr Val
 1880 1885 1890
 Met Ser Thr Pro Asp Ala Phe Val Asp Phe Ser Arg Gln Arg Gly
 1895 1900 1905
 Leu Ala Glu Asp Gly Arg Ile Lys Ala Phe Ala Ser Ala Ala Asp
 1910 1915 1920
 Gly Thr Gly Trp Gly Glu Gly Val Gly Met Leu Leu Val Glu Arg
 1925 1930 1935
 Leu Ser Asp Ala Arg Arg Asn Gly His Pro Val Leu Ala Val Val
 1940 1945 1950
 Arg Gly Ser Ala Ile Asn Gln Asp Gly Ala Ser Asn Gly Leu Thr
 1955 1960 1965
 Ala Pro Asn Gly Pro Ser Gln Gln Arg Val Ile Arg Gln Ala Leu
 1970 1975 1980
 Ala Gly Ala Gly Leu Ser Ala Ala Asp Val Asp Ala Val Glu Ala
 1985 1990 1995
 His Gly Thr Gly Thr Arg Leu Gly Asp Pro Ile Glu Ala Gln Ala
 2000 2005 2010
 Leu Leu Ala Thr Tyr Gly Gln Gly Arg Pro Ala Asp Arg Pro Leu
 2015 2020 2025
 Trp Leu Gly Ser Val Lys Ser Asn Ile Gly His Thr Gln Ala Ala
 2030 2035 2040
 Ala Gly Val Ala Gly Val Met Lys Met Val Met Ala Met Arg His
 2045 2050 2055
 Gly Val Leu Pro Arg Thr Leu His Val Asp Gly Pro Thr Pro His
 2060 2065 2070
 Val Asp Trp Ser Ala Gly Asp Val Ala Leu Leu Thr Glu Gln Arg
 2075 2080 2085
 Glu Trp Pro Ala Thr Gly His Pro Arg Arg Ala Gly Val Ser Ser
 2090 2095 2100
 Phe Gly Leu Ser Gly Thr Asn Ala His Thr Ile Ile Glu Glu Ala
 2105 2110 2115
 Pro Ala Asp Asp Asp Ala Glu Pro Thr Thr Gly Ala Gly Thr Ala
 2120 2125 2130
 Pro Ser Val Leu Pro Leu Leu Ile Ser Ala Lys Ser Asp Ala Gly
 2135 2140 2145
 Leu Arg Ala Gln Ser Glu Gln Leu Ala Thr His Leu Val Gly Asn
 2150 2155 2160

Pro	Asp	Val	Pro	Ile	Gly	Asp	Ile	Ala	Tyr	Ser	Leu	Thr	Thr	Gly
	2165					2170					2175			
Arg	Ser	Gly	Leu	Glu	Thr	Arg	Ala	Ile	Leu	Val	Gly	Asp	Ala	Asp
	2180					2185					2190			
Asn	Arg	Thr	Gly	Leu	Ala	Ala	Ala	Leu	Arg	Ser	Leu	Ala	Ala	Gly
	2195					2200					2205			
Glu	Gln	Ala	Pro	Gly	Leu	Val	Gln	Gly	Thr	Val	Thr	Glu	Gly	Gly
	2210					2215					2220			
Leu	Ala	Phe	Leu	Phe	Thr	Gly	Gln	Gly	Ser	Gln	Arg	Leu	Gly	Met
	2225					2230					2235			
Gly	Arg	Glu	Leu	Tyr	Glu	Thr	Tyr	Pro	Val	Phe	Ala	Asp	Ala	Leu
	2240					2245					2250			
Asp	Ala	Val	Cys	Ala	Arg	Met	Asp	Leu	Glu	Val	Pro	Leu	Arg	Asp
	2255					2260					2265			
Val	Leu	Phe	Gly	Ala	Tyr	Ala	Gly	Leu	Leu	Asp	Glu	Thr	Ala	Tyr
	2270					2275					2280			
Thr	Gln	Pro	Ala	Leu	Phe	Ala	Val	Glu	Val	Ala	Leu	Phe	Arg	Leu
	2285					2290					2295			
Val	Glu	Ser	Trp	Gly	Leu	Arg	Pro	Asp	Phe	Val	Ala	Gly	His	Ser
	2300					2305					2310			
Ile	Gly	Glu	Ile	Ala	Ala	Ala	His	Val	Ala	Gly	Val	Leu	Ser	Leu
	2315					2320					2325			
Asp	Asp	Ala	Cys	Ala	Leu	Val	Glu	Ala	Arg	Gly	Arg	Leu	Met	Gly
	2330					2335					2340			
Ala	Leu	Pro	Gly	Gly	Gly	Val	Met	Ile	Ala	Val	Gln	Ala	Pro	Glu
	2345					2350					2355			
Ala	Glu	Val	Leu	Pro	Leu	Leu	Thr	Glu	Arg	Val	Ser	Ile	Ala	Ala
	2360					2365					2370			
Ile	Asn	Gly	Pro	Gln	Ser	Val	Val	Ile	Ala	Gly	Asp	Glu	Ala	Asp
	2375					2380					2385			
Ala	Val	Ala	Ile	Val	Glu	Ser	Phe	Thr	Gly	Arg	Lys	Ser	Lys	Arg
	2390					2395					2400			
Leu	Thr	Val	Ser	His	Ala	Phe	His	Ser	Pro	His	Met	Asp	Gly	Met
	2405					2410					2415			
Leu	Glu	Asp	Phe	Arg	Ala	Val	Ala	Glu	Gly	Leu	Ser	Tyr	Glu	Ala
	2420					2425					2430			
Pro	Arg	Ile	Pro	Val	Val	Ser	Asn	Leu	Thr	Gly	Ala	Leu	Val	Ser
	2435					2440					2445			
Asp	Glu	Met	Gly	Ser	Ala	Glu	Phe	Trp	Val	Arg	His	Val	Arg	Glu
	2450					2455					2460			

Ala Val	Arg Phe	Leu Asp	Gly Met	Arg Val	Leu Glu	Ala Ala	Gly						
2465			2470		2475								
Val Thr	Thr Tyr	Val Glu	Leu Gly	Pro Gly	Gly Val	Leu Ser	Ala						
2480			2485		2490								
Leu Ala	Gln Glu	Cys Val	Ser Gly	Asp Gly	Ala Ala	Phe Val	Pro						
2495			2500		2505								
Val Leu	Arg Ser	Gly Arg	Pro Glu	Ala Glu	Thr Ala	Val Thr	Ala						
2510			2515		2520								
Leu Ala	Gln Ala	His Val	Arg Gly	Val Asp	Val Asp	Trp Ala	Ala						
2525			2530		2535								
Phe Phe	Ser Gly	Thr Gly	Val Gln	Arg Val	Asp Leu	Pro Thr	Tyr						
2540			2545		2550								
Ala Phe	Gln Arg	Gln Arg	Phe Trp	Pro Ala	Met Thr	Ala Glu	Ser						
2555			2560		2565								
Ala Pro	Val Gly	Gly Thr	Val Asp	Ala Val	Asp Ala	His Phe	Trp						
2570			2575		2580								
Asp Val	Ile Glu	Gln Glu	Asp Val	Glu Ser	Leu Ala	Glu Leu	Leu						
2585			2590		2595								
Gly Leu	Asp Asp	Ala Ser	Ala Trp	Gly Ser	Val Val	Pro Ala	Leu						
2600			2605		2610								
Ser Ala	Trp Arg	Arg Gln	Gly Gln	Gln Gln	Ala Gln	Val Asp	Gly						
2615			2620		2625								
Trp Arg	Tyr Arg	Ala Ser	Trp Lys	Pro Val	Thr Ala	Ala Val	Ser						
2630			2635		2640								
Ser Gly	Val Val	Ser Gly	Thr Trp	Val Val	Ala Val	Pro Ala	Gly						
2645			2650		2655								
Ser Ala	Gly Asp	Asp Ala	Arg Val	Glu Ala	Val Thr	Asn Gly	Leu						
2660			2665		2670								
Ala Gly	Arg Gly	Val Asp	Val Arg	Arg Val	Val Val	Glu Ala	Gly						
2675			2680		2685								
Val Asp	Arg Ala	Ala Leu	Ala Gly	Leu Leu	Ala Gly	Glu Gly	Ser						
2690			2695		2700								
Leu Ala	Gly Val	Val Ser	Leu Leu	Gly Leu	Asp Glu	Ser Gly	Gly						
2705			2710		2715								
Leu Ala	Ala Thr	Ala Gly	Leu Val	Gln Ala	Leu Gly	Asp Ala	Gly						
2720			2725		2730								
Val Ser	Ala Pro	Leu Trp	Cys Leu	Thr Arg	Gly Ala	Val Ser	Val						
2735			2740		2745								
Gly Arg	Ser Asp	Arg Leu	Val Ser	Pro Val	Gln Ala	Gln Val	Trp						
2750			2755		2760								

Gly Leu Gly Arg Val Ala Ala Leu Glu Val Pro Glu Arg Trp Gly
 2765 2770 2775
 Gly Leu Val Asp Leu Pro Glu Val Leu Asp Glu Arg Ala Val Ser
 2780 2785 2790
 Arg Leu Ile Gly Val Leu Ala Gly Ser Gly Glu Asp Gln Val Ala
 2795 2800 2805
 Val Arg Ser Ser Gly Val Phe Gly Arg Arg Leu Val Arg Ala Pro
 2810 2815 2820
 Arg Ala Glu Gly Ala Ala Ser Trp Thr Pro Thr Gly Thr Val Leu
 2825 2830 2835
 Val Thr Gly Gly Thr Gly Val Leu Gly Gly Arg Val Ala Arg Trp
 2840 2845 2850
 Leu Ala Gly Ala Gly Ala Glu Arg Leu Val Leu Thr Ser Arg Arg
 2855 2860 2865
 Gly Leu Asp Ala Pro Gly Thr Ala Glu Leu Val Glu Glu Leu Thr
 2870 2875 2880
 Ser Ser Gly Val Glu Val Ser Val Val Ala Cys Asp Ala Ala Asp
 2885 2890 2895
 Arg Asp Ala Leu Arg Ala Leu Leu Ser Ser Glu Ala Gly Ser Leu
 2900 2905 2910
 Thr Ala Val Ile His Thr Ala Gly Val Leu Asp Asp Gly Val Leu
 2915 2920 2925
 Asp Ala Leu Thr Pro Asp Arg Ile Asp Gly Val Val Arg Ala Lys
 2930 2935 2940
 Ala Val Ser Ala Leu Asn Leu His Glu Leu Thr Ala Glu Leu Gly
 2945 2950 2955
 Ile Glu Leu Ser Ala Phe Val Leu Phe Ser Ser Met Ser Gly Thr
 2960 2965 2970
 Val Gly Thr Ala Gly Gln Ala Asn Tyr Ala Ala Ala Asn Ala Tyr
 2975 2980 2985
 Leu Asp Ala Leu Ala Glu Gln Arg Arg Ala Asp Gly Leu Ala Ala
 2990 2995 3000
 Thr Ser Ile Ala Trp Gly Pro Trp Ala Glu Gly Gly Met Ala Ala
 3005 3010 3015
 Asp Ala Ala Leu Glu Ala Arg Met Arg Arg Asp Gly Val Pro Pro
 3020 3025 3030
 Met Pro Ala Asp Pro Ala Ile Arg Ala Leu Arg Gln Ala Val Ala
 3035 3040 3045
 Gly Asp Asp Ala Val Leu Thr Val Ala Asp Val Glu Trp Asp Arg
 3050 3055 3060

Phe Leu Pro Gly Phe Val Ala Ala Arg His Ser Glu Leu Phe Ser
3065 3070 3075
Glu Leu Arg Asp Val Arg Asp Ala Arg Ala Ala Gln Asp Arg Ala
3080 3085 3090
Gln Ala Ala Val Ala Ala Asp Arg Pro Asp Ser Leu Ser Gly Arg
3095 3100 3105
Leu Ser Ala Gln Ala Pro Ala Glu Gln Glu Arg Glu Leu Leu Asp
3110 3115 3120
Leu Val Arg Thr Gln Val Ala Ala Val Leu Gly His Ala Gly Val
3125 3130 3135
Glu Asn Val Gly Ala Gly Arg Ala Phe Lys Glu Leu Gly Phe Asp
3140 3145 3150
Ser Leu Met Ala Val Glu Leu Arg Asn Arg Ile Gly Ser Ala Thr
3155 3160 3165
Glu Leu Arg Leu Pro Ala Thr Leu Ile Tyr Asp His Pro Thr Ser
3170 3175 3180
Ala Ala Leu Ala Glu Phe Leu Arg Gly Glu Leu Val Gly Thr Val
3185 3190 3195
Arg Val Ala Asp Lys Val Leu Pro Ala Val Val Ser Ala Asp Glu
3200 3205 3210
Asp Pro Ile Ala Ile Val Ser Met Ser Cys Arg Phe Pro Gly Gly
3215 3220 3225
Val Arg Thr Pro Glu Asp Leu Trp Arg Leu Leu Val Asp Gly Thr
3230 3235 3240
Asp Ala Val Gly Ala Phe Pro Ala Asp Arg Gly Trp Asp Leu Asp
3245 3250 3255
Arg Leu Tyr Ser Pro Asp Pro Asp Gln Pro Gly Thr Ser Tyr Thr
3260 3265 3270
Arg Glu Gly Gly Phe Phe Asp Gly Ala Ala Asp Phe Asp Pro Gly
3275 3280 3285
Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln
3290 3295 3300
Gln Arg Leu Leu Leu Glu Thr Ser Trp Glu Ala Ile Glu Arg Ala
3305 3310 3315
Gly Ile Asp Pro Ser Ser Leu Arg Gly Ser Gln Ala Gly Val Phe
3320 3325 3330
Val Gly Thr Asn Gly Gln Asp Tyr Leu Ser Leu Ile Thr Arg Glu
3335 3340 3345
Ser Glu Gly Leu Glu Gly His Leu Gly Thr Gly Asn Ala Gly Ser
3350 3355 3360

Val Met Ser Gly Arg Val Ser Tyr Val Leu Gly Leu Glu Gly Pro
 3365 3370 3375
 Ala Val Thr Val Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Leu
 3380 3385 3390
 His Trp Ala Ile Gln Ala Leu Arg Gln Gly Glu Cys Ser Met Ala
 3395 3400 3405
 Leu Ala Gly Gly Val Thr Val Met Ser Thr Pro Glu Asn Phe Val
 3410 3415 3420
 Asp Phe Ser Arg Gln Arg Gly Leu Ala Glu Asp Gly Arg Ile Lys
 3425 3430 3435
 Ala Phe Ala Ser Ala Ala Asp Gly Thr Gly Trp Gly Glu Gly Val
 3440 3445 3450
 Gly Met Leu Leu Val Glu Arg Leu Ser Asp Ala Arg Arg Asn Gly
 3455 3460 3465
 His Pro Val Leu Ala Val Val Arg Gly Ser Ala Val Asn Gln Asp
 3470 3475 3480
 Gly Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ser Gln Gln
 3485 3490 3495
 Arg Val Ile Arg Ala Ala Leu Ala Ser Ala Gly Leu Ser Ala Ala
 3500 3505 3510
 Asp Val Asp Val Val Glu Ala His Gly Thr Gly Thr Lys Leu Gly
 3515 3520 3525
 Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Asp
 3530 3535 3540
 Arg Pro Ala Gly Arg Pro Leu Trp Leu Gly Ser Ile Lys Ser Asn
 3545 3550 3555
 Ile Gly His Thr Gln Ala Ala Ala Gly Val Ala Gly Ile Ile Lys
 3560 3565 3570
 Met Val Leu Ala Met Gln His Gly Val Leu Pro Gln Thr Leu His
 3575 3580 3585
 Val Asp Glu Pro Thr Pro His Val Asp Trp Ser Ala Gly Glu Val
 3590 3595 3600
 Thr Leu Leu Thr Glu Gln Thr Ala Trp Pro Thr Val Asp Arg Pro
 3605 3610 3615
 Arg Arg Ala Gly Val Ser Ser Phe Gly Ile Ser Gly Thr Asn Ala
 3620 3625 3630
 His Thr Ile Ile Glu Gln Ala Pro Ala Val Glu Gln Leu Ala Asp
 3635 3640 3645
 Gly Asp Ala Thr Pro Ala Thr Pro Ala Leu Ala Leu Pro Leu Pro
 3650 3655 3660

Tyr Val Leu Ser Ala Lys Ser Pro Glu Ala Leu Arg Ala Gln Ala
 3665 3670 3675
 Ser Val Leu Arg Thr His Leu Glu Ala Thr Asp His Asn Gly Pro
 3680 3685 3690
 Gly Ser Asp Asp Leu Ala Phe Ser Leu Ala Thr Ala Arg Ala His
 3695 3700 3705
 Leu Glu His Arg Ala Val Leu Thr Ala Asp Asp Pro Gln Glu Phe
 3710 3715 3720
 Arg Glu Ala Leu Ala Arg Leu Ala Asp Gly Asp Pro Ser Pro Arg
 3725 3730 3735
 Ile Thr Thr Gly Ala Val Ser Asp Gly Arg Thr Ala Phe Leu Phe
 3740 3745 3750
 Thr Gly Gln Gly Ser Gln Arg Leu Gly Met Gly Arg Glu Leu Tyr
 3755 3760 3765
 Glu Ala Tyr Pro Val Phe Ala Asp Ala Leu Asp Ala Val Cys Ala
 3770 3775 3780
 His Val Asp Ala His Leu Glu Val Pro Leu Lys Asp Val Leu Phe
 3785 3790 3795
 Gly Ala Asp Ala Gly Leu Leu Asp Gln Thr Ala Tyr Thr Gln Pro
 3800 3805 3810
 Ala Leu Phe Ala Val Glu Val Ala Leu Phe Arg Leu Val Glu Ser
 3815 3820 3825
 Trp Gly Val Lys Pro Asp Phe Val Ala Gly His Ser Ile Gly Glu
 3830 3835 3840
 Ile Ala Ala Ala His Val Ala Gly Val Phe Ser Leu Gln Asp Ala
 3845 3850 3855
 Ser Glu Leu Val Phe Ala Arg Gly Arg Leu Met Gln Ala Leu Pro
 3860 3865 3870
 Thr Gly Gly Val Met Ile Ala Val Gln Ala Ser Glu Asp Glu Val
 3875 3880 3885
 Leu Pro Leu Leu Thr Asp Arg Val Ser Ile Ala Ala Ile Asn Gly
 3890 3895 3900
 Pro Gln Ser Val Val Ile Ala Gly Asp Glu Ala Asp Ala Val Ala
 3905 3910 3915
 Ile Ala Glu Ser Phe Thr Asp Arg Lys Ser Lys Arg Leu Thr Val
 3920 3925 3930
 Ser His Ala Phe His Ser Pro His Met Asp Gly Met Leu Asp Ala
 3935 3940 3945
 Phe Arg Glu Ile Ala Glu Gly Leu Ser Tyr Glu Pro Ser Arg Ile
 3950 3955 3960

Pro Val Val Ser Asn Leu Thr Gly Ala Leu Val Ser Asp Glu Met
 3965 3970 3975
 Gly Ser Ala Glu Phe Trp Val Arg His Val Arg Glu Ala Val Arg
 3980 3985 3990
 Phe Leu Asp Gly Ile Arg Thr Leu Glu Ala Ala Gly Val Thr Lys
 3995 4000 4005
 Tyr Val Glu Leu Gly Pro Asp Gly Val Leu Ser Ala Met Ala Gln
 4010 4015 4020
 Asp Cys Val Ser Gly Glu Gly Ser Val Phe Ile Pro Val Leu Arg
 4025 4030 4035
 Lys Ala Arg Pro Glu Ala Glu Ser Val Thr Thr Ala Leu Ala Ser
 4040 4045 4050
 Ala His Val His Gly Ile Pro Val Asp Trp Gln Ala Tyr Phe Ala
 4055 4060 4065
 Gly Thr Gly Ala Gln Arg Val Asp Leu Pro Thr Tyr Ala Phe Gln
 4070 4075 4080
 Arg Gln Arg Tyr Trp Pro Ser Ala Ala Ala Phe Val Thr Gly Asp
 4085 4090 4095
 Pro Thr Ala Ile Gly Leu Gly Asp Ala Gly His Pro Leu Leu Gly
 4100 4105 4110
 Ala Ala Val Ala Leu Ala Asp Ser Glu Gly Val Leu Phe Thr Gly
 4115 4120 4125
 Arg Leu Ser Leu Asp Thr His Pro Trp Leu Ala Asp His Thr Ile
 4130 4135 4140
 Leu Gly Ser Val Leu Leu Pro Gly Thr Ala Phe Val Asp Leu Ala
 4145 4150 4155
 Ile Arg Ala Gly Asp Gln Val Gly Cys Asp Val Val Glu Glu Leu
 4160 4165 4170
 Thr Leu Glu Ala Pro Leu Val Val Pro Gln Arg Gly Gly Val Gln
 4175 4180 4185
 Leu Gln Leu Val Val Glu Ala Pro Ser Gly Pro Gly Gln Arg Pro
 4190 4195 4200
 Phe Ser Val His Ser Arg Arg Gln Asp Ala Tyr Ala Glu Glu Pro
 4205 4210 4215
 Trp Met Arg His Ala Ser Gly Val Leu Thr Ser Gly Val Ser Arg
 4220 4225 4230
 Arg Glu Leu Ser Val Glu Gly Gly Glu Phe Glu Ala Leu Ala Val
 4235 4240 4245
 Trp Pro Pro Thr Gly Ala Val Pro Val Asp Val Arg Gly Leu Tyr
 4250 4255 4260

Glu Glu Leu Ala Glu Ala Gly Val Ala Tyr Gly Pro Leu Phe Gln
 4265 4270 4275
 Gly Leu Lys Ala Ala Trp Arg Arg Asp Gly Glu Leu Phe Thr Glu
 4280 4285 4290
 Val Ala Leu Pro Gly Glu Ala Arg Arg Glu Ala Ala Arg Phe Gly
 4295 4300 4305
 Leu His Pro Ala Leu Leu Asp Ala Gly Leu His Ala Ile Gly His
 4310 4315 4320
 Gly Glu Gly Pro Glu Pro Ala Met Thr Gly Ala Leu Leu Pro Phe
 4325 4330 4335
 Ser Trp Ala Gly Val Ser Leu Tyr Ala Ala Gly Ala Ser Ser Leu
 4340 4345 4350
 Arg Met Arg Leu Thr Pro His Thr Pro Asp Asp Ala His Thr Met
 4355 4360 4365
 Ala Leu Leu Val Ala Asp Glu Thr Gly Arg Pro Val Ala Ala Val
 4370 4375 4380
 Glu Ser Leu Ile Leu Arg Thr Ala Ser Ala Asp Gln Val Arg Ala
 4385 4390 4395
 Ala Asp Gly Gly His Leu Asp Ser Leu Phe Lys Val Glu Trp Leu
 4400 4405 4410
 Pro Val Ala Gly Gly Ala Thr Pro His Gly Asp Ser Thr Gly Arg
 4415 4420 4425
 Arg Trp Ala Val Leu Gly Arg Asp Gly Leu Gly Leu Pro Ala Thr
 4430 4435 4440
 Gly Val Gln Gly Gln Val Ala Glu Tyr Asp Asp Ala Ser Ala Leu
 4445 4450 4455
 Gly Ala Ala Leu Ala Ala Gly Glu Pro Val Pro Asp Ala Val Phe
 4460 4465 4470
 Val His Pro Gly Ala Leu Pro Gly Gln Asp Thr Asp Thr Thr Ala
 4475 4480 4485
 Ala Ser Val His Ala Ala Val Thr Asp Ala Leu Ser Phe Val Gln
 4490 4495 4500
 Glu Trp Leu Ala Asp Glu Arg Phe Ala Ala Thr Arg Leu Val Trp
 4505 4510 4515
 Leu Thr Ser Gly Ala Val Ala Asp Glu Pro Gly Ala Gly Val Arg
 4520 4525 4530
 Asp Leu Ala Gly Ser Ala Val Arg Gly Leu Leu Arg Ser Ala Gln
 4535 4540 4545
 Ser Glu Asn Pro Gly Gln Leu Leu Met Leu Asp Leu Asp Gln Asp
 4550 4555 4560

Pro Ala Ser Leu Ala Ala Leu Pro Ala Ala Leu Ala Ala Gly Glu
 4565 4570 4575
 Pro Glu Leu Ala Ile Arg Arg Gly Glu Leu Arg Thr Pro Arg Leu
 4580 4585 4590
 Thr Arg Val Pro Ser Ala Asp Ala Ala Ala Glu Pro Leu Gly Thr
 4595 4600 4605
 Leu Gly Asp Pro Ser Gly Thr Val Leu Val Thr Gly Ala Thr Gly
 4610 4615 4620
 Thr Leu Gly Gly Leu Phe Ala Arg His Leu Val Thr Ala Tyr Gly
 4625 4630 4635
 Val Arg Arg Leu Leu Leu Thr Ser Arg Arg Gly Pro Glu Ala Glu
 4640 4645 4650
 Gly Ala Ala Glu Leu Val Ala Glu Leu Glu Gln Leu Gly Ala His
 4655 4660 4665
 Val Glu Leu Val Ala Cys Asp Ala Ala Asp Arg Ser Ala Leu Ala
 4670 4675 4680
 Ala Leu Leu Gly Ala Val Pro Ser Glu His Pro Leu Thr Ala Val
 4685 4690 4695
 Val His Thr Ala Gly Val Leu Asp Asp Gly Ile Leu Ser Ser Leu
 4700 4705 4710
 Thr Pro Glu Arg Val Ala Ala Val Leu Arg Pro Lys Val Asp Ala
 4715 4720 4725
 Ala Trp Asn Leu His Glu Leu Thr Arg Glu Leu Gly Leu Ser Ala
 4730 4735 4740
 Phe Val Leu Phe Ser Gly Ala Ala Ala Ala Phe Gly Ala Ala Gly
 4745 4750 4755
 Gln Gly Asn Tyr Ala Ala Ala Asn Ser Phe Leu Glu Ala Leu Ala
 4760 4765 4770
 Glu Gln Arg Arg Ala Glu Gly Leu Pro Ala Thr Ser Leu Ala Trp
 4775 4780 4785
 Gly Leu Trp Ala Pro Gln Thr Gly Gly Met Ala Gln Gln Leu Asp
 4790 4795 4800
 Glu Val Asp Leu Arg Arg Ile Ala Arg Asp Gly Val Gly Gly Leu
 4805 4810 4815
 Ser Gly Asp Glu Gly Leu Gly Leu Phe Asp Thr Ala Met Thr Val
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 Asp Ala Ala Val Leu Leu Pro Met Arg Leu Asp Leu Ala Val Ala
 4835 4840 4845
 Arg Ala Gln Ala Val Ser Thr Gly Glu Thr Pro Ala Leu Leu Arg
 4850 4855 4860

Ala	Leu	Ile	Arg	Val	Pro	Ala	Arg	Arg	Ala	Val	Glu	Gln	Arg	Thr
4865						4870					4875			
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4880						4885					4890			
Pro	Asp	Ala	Glu	Arg	Glu	Asp	Met	Leu	Leu	Asp	Leu	Val	Cys	Gly
4895						4900					4905			
Arg	Val	Ala	Glu	Val	Leu	Gly	His	Thr	Asp	Ala	Arg	Ala	Val	Asp
4910						4915					4920			
Ala	Asp	Arg	Ala	Phe	Lys	Glu	Leu	Gly	Phe	Asp	Ser	Leu	Thr	Ala
4925						4930					4935			
Val	Glu	Leu	Arg	Asn	Val	Leu	Lys	Ala	Ala	Thr	Gly	Leu	Arg	Leu
4940						4945					4950			
Ser	Pro	Thr	Leu	Val	Phe	Asp	Tyr	Pro	Thr	Pro	Val	Ala	Leu	Ala
4955						4960					4965			
Arg	His	Leu	Leu	Ala	Glu	Leu	Ala	Gly	Thr	Ala	Asp	Asp	Gln	Asp
4970						4975					4980			
Ala	Val	Arg	Gly	Arg	Lys	Ala	Pro	Ala	Arg	Pro	Ala	Thr	Ala	Ala
4985						4990					4995			
Val	Thr	Ser	Val	Thr	Gly	Glu	Asp	Pro	Ile	Val	Ile	Val	Gly	Met
5000						5005					5010			
Gly	Cys	Arg	Phe	Pro	Gly	Gly	Val	Arg	Ser	Pro	Glu	Asp	Leu	Trp
5015						5020					5025			
Gln	Leu	Val	Ala	Thr	Gly	Gly	Asp	Gly	Ile	Thr	Gly	Phe	Pro	Ser
5030						5035					5040			
Asp	Arg	Gly	Trp	Asn	Val	Glu	Ala	Leu	Tyr	His	Pro	Asp	Pro	Asp
5045						5050					5055			
His	Ala	Gly	Thr	Ser	Tyr	Thr	Arg	Glu	Gly	Gly	Phe	Leu	His	Asp
5060						5065					5070			
Ala	Ala	Asp	Phe	Asp	Pro	Gly	Phe	Phe	Gly	Ile	Ser	Pro	Arg	Glu
5075						5080					5085			
Ala	Leu	Ala	Met	Asp	Pro	Gln	Gln	Arg	Leu	Leu	Leu	Glu	Thr	Ser
5090						5095					5100			
Trp	Glu	Ala	Phe	Glu	Arg	Ala	Gly	Ile	Asp	Pro	Ala	Thr	Leu	Arg
5105						5110					5115			
Gly	Ser	Arg	Thr	Gly	Val	Phe	Ala	Gly	Val	Met	Tyr	His	Asp	Tyr
5120						5125					5130			
Val	Thr	Gly	Ile	Gly	Asp	Gly	Gly	Ser	Ala	Val	Glu	Leu	Pro	Glu
5135						5140					5145			
Gly	Val	Glu	Gly	Tyr	Leu	Gly	Thr	Gly	Asn	Ala	Gly	Ser	Ile	Ala
5150						5155					5160			

Ser Gly Arg Ile Ala Tyr Thr Phe Gly Leu Glu Gly Pro Ala Val
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 Thr Val Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Trp
 5180 5185 5190
 Ala Ile Gln Ala Leu Arg Ser Gly Glu Cys Thr Met Ala Leu Ala
 5195 5200 5205
 Gly Gly Val Ala Val Met Ala Thr Pro Glu Thr Phe Val Asp Phe
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 Ser Arg Gln Arg Gly Leu Ser Ala Asp Gly Arg Cys Lys Ser Phe
 5225 5230 5235
 Ala Ala Ala Ala Asp Gly Thr Gly Trp Ala Glu Gly Ala Gly Met
 5240 5245 5250
 Leu Leu Val Glu Arg Leu Ser Asp Ala Glu Arg Asn Gly His Pro
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 Val Leu Ala Val Val Arg Gly Ser Ala Ile Asn Gln Asp Gly Ala
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 Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ser Gln Gln Arg Val
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 Asp Ala Val Glu Ala His Gly Thr Gly Thr Arg Leu Gly Asp Pro
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 Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Arg Glu Arg Glu
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 Ala Gly Arg Pro Leu Trp Leu Gly Ser Ile Lys Ser Asn Ile Gly
 5345 5350 5355
 His Thr Gln Ala Ala Ala Gly Val Ala Gly Ile Ile Lys Met Val
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 Met Ala Met Arg His Gly Val Leu Pro Gln Thr Leu His Val Asp
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 Glu Pro Ser Pro Gln Val Asp Trp Glu Ala Gly Glu Val Ser Leu
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 Leu Thr Gly Ala Met Pro Trp Pro Gln Thr Gly Arg Pro Arg Arg
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 Ala Gly Val Ser Ser Phe Gly Ile Ser Gly Thr Asn Ala His Thr
 5420 5425 5430
 Ile Ile Glu Gln Pro Pro Thr Arg Glu Val Thr Pro Thr Val Pro
 5435 5440 5445
 Val Ala Pro Val Val Pro Thr Val Pro Thr Val Pro Val Val Pro
 5450 5455 5460

Trp Val Leu Ser Gly Lys Gly Glu Glu Ala Leu Arg Ala Gln Ala
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 Arg Gln Leu Gln Ser Tyr Val Leu Arg Ala Pro Glu Leu Arg Pro
 5480 5485 5490
 Val Asp Ile Ala Gly Ser Leu Ala Val Gly Arg Ala Ser Phe Glu
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 Arg Val Ser Ile Ala Ala Ile Asn Gly Pro Arg Ser Val Val Ile
 5690 5695 5700
 Ala Gly Asp Glu Ala Asp Ala Val Ala Ile Val Glu Ser Phe Thr
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 Gly Arg Lys Ser Lys Arg Leu Thr Val Ser His Ala Phe His Ser
 5720 5725 5730
 Pro His Met Asp Gly Met Leu Glu Asp Phe Arg Ala Val Ala Glu
 5735 5740 5745
 Gly Leu Ser Tyr Glu Ala Pro Arg Ile Pro Val Val Ser Asn Leu
 5750 5755 5760

Thr Gly	Thr Leu Val	Thr Asp	Glu Met Gly Ser	Ala	Glu Phe Trp
5765		5770		5775	
Val Arg	His Val Arg	Glu Ala	Val Arg Phe Leu	Asp	Gly Ile Arg
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Ala Leu	Glu Ala Ala	Gly Val	Thr Thr Tyr Val	Glu	Leu Gly Pro
5795		5800		5805	
Gly Gly	Val Leu Ser	Ala Leu	Ala Gln Glu Cys	Val	Ser Gly Asp
5810		5815		5820	
Gly Ala	Ala Phe Val	Pro Val	Leu Arg Ser Gly	Arg	Ser Glu Ala
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Glu Thr	Ala Val Thr	Ala Leu	Ala Gln Ala His	Val	Arg Gly Val
5840		5845		5850	
Asn Val	Asp Trp Ala	Ala Phe	Phe Ala Gly Thr	Gly	Ala Glu Arg
5855		5860		5865	
Val Asp	Leu Pro Thr	Tyr Ala	Phe Gln Arg Gln	Arg	Tyr Trp Leu
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His Ile	Pro Arg Val	Ala Gln	Ser Gly Val Ala	Asp	Glu Val Asp
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Ala Arg	Phe Trp Asp	Ala Val	Glu Arg Glu Asp	Leu	Glu Ser Leu
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Ala Ser	Thr Leu Glu	Val Asp	Asp Glu Ser Ala	Trp	Ser Ser Val
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Leu Pro	Ala Leu Ser	Ala Trp	Arg Arg Glu Arg	Arg	Ala Gln Ser
5930		5935		5940	
Glu Val	Asp Gly Trp	Arg Tyr	Arg Val Ser Trp	Lys	Pro Leu Ala
5945		5950		5955	
Glu Val	Ser Ala Ser	Gly Leu	Ser Gly Ser Trp	Val	Val Ile Ser
5960		5965		5970	
Pro Ala	Gly Ser Val	Asp Asp	Ser Ala Val Val	Ser	Ala Leu Val
5975		5980		5985	
Gly Arg	Gly Ala Glu	Val Arg	Arg Val Val Val	Glu	Ala Gly Val
5990		5995		6000	
Asp Arg	Ser Ala Leu	Ala Gly	Leu Leu Ala Asp	Ala	Gly Ser Ala
6005		6010		6015	
Ala Gly	Val Val Ser	Leu Leu	Gly Leu Asp Glu	Ser	Glu Gly Leu
6020		6025		6030	
Leu Gly	Thr Val Gly	Leu Val	Gln Ala Leu Gly	Asp	Ala Gly Val
6035		6040		6045	
Glu Ala	Pro Leu Trp	Cys Leu	Thr Arg Gly Ala	Val	Ser Val Gly
6050		6055		6060	

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 Leu Gly Arg Val Ala Ala Leu Glu Val Pro Glu Arg Trp Gly Gly
 6080 6085 6090
 Leu Val Asp Leu Pro Glu Val Leu Asp Glu Arg Ala Val Ala Arg
 6095 6100 6105
 Leu Val Gly Val Leu Ala Gly Ser Gly Glu Asp Gln Val Ala Val
 6110 6115 6120
 Arg Ser Ser Gly Val Phe Gly Arg Arg Leu Val Arg Ala Pro Arg
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 Ala Glu Gly Ala Ser Ala Trp Thr Pro Thr Gly Thr Val Leu Val
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 Thr Gly Gly Thr Gly Val Leu Gly Gly Arg Val Ala Arg Trp Leu
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 Ala Gly Ala Gly Ala Glu Arg Leu Val Leu Thr Ser Arg Arg Gly
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 Pro Asp Ala Pro Gly Ala Ala Glu Leu Val Glu Glu Leu Thr Thr
 6185 6190 6195
 Gly Phe Gly Val Glu Val Ser Val Val Ala Cys Asp Ala Ala Asp
 6200 6205 6210
 Arg Asp Ala Leu Arg Thr Leu Leu Ser Ala Glu Ala Gly Thr Leu
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 Thr Ala Val Ile His Thr Ala Gly Val Leu Asp Asp Gly Val Leu
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 Asp Ala Leu Thr Pro Asp Arg Ile Asp Ser Val Leu Arg Ala Lys
 6245 6250 6255
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 Ile Glu Leu Ser Ala Phe Val Leu Phe Ser Ser Met Ser Gly Thr
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 Val Gly Ala Ala Gly Gln Ala Asn Tyr Ala Ala Ala Asn Ala Tyr
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 Thr Ser Leu Ala Trp Gly Pro Trp Ala Glu Gly Gly Met Ala Gly
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 Ala Gly Gly Phe Leu Tyr Asp Ala Ala Asp Phe Asp Ala Asp Phe
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 Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln
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 Ile Asp Pro Ser Ser Leu Arg Gly Ser Gln Ala Gly Val Phe Val
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 Gly Thr Asn Gly Gln Asp Tyr Gly Ala Met Leu Gln Thr Ile Pro
 6650 6655 6660

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Val	Thr	Val	Asp	Thr	Ala	Cys	Ser	Ala	Ser	Leu	Val	Ala	Leu	His
6695						6700					6705			
Trp	Ala	Val	Gln	Ala	Leu	Arg	Ser	Gly	Glu	Cys	Ser	Leu	Ala	Leu
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Ala	Gly	Gly	Val	Thr	Val	Met	Ser	Ser	Pro	Gly	Ala	Tyr	Ile	Asp
6725						6730					6735			
Phe	Ser	Arg	Gln	Arg	Gly	Leu	Ala	Glu	Asp	Gly	Arg	Ile	Lys	Ala
6740						6745					6750			
Phe	Ala	Ala	Ala	Ala	Asp	Gly	Thr	Gly	Trp	Gly	Glu	Gly	Val	Gly
6755						6760					6765			
Met	Leu	Leu	Val	Glu	Arg	Leu	Ser	Asp	Ala	Arg	Arg	Asn	Gly	His
6770						6775					6780			
Pro	Val	Leu	Ala	Leu	Val	Arg	Gly	Ser	Ala	Ile	Asn	Gln	Asp	Gly
6785						6790					6795			
Ala	Ser	Asn	Gly	Leu	Thr	Ala	Pro	Asn	Gly	Pro	Ser	Gln	Gln	Arg
6800						6805					6810			
Val	Ile	Arg	Gln	Ala	Leu	Ala	Asn	Ala	Gly	Leu	Ser	Ala	Ala	Glu
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Val	Asp	Ala	Val	Glu	Ala	His	Gly	Thr	Gly	Thr	Arg	Leu	Gly	Asp
6830						6835					6840			
Pro	Ile	Glu	Val	Gln	Ala	Leu	Leu	Ala	Thr	Tyr	Gly	Arg	Glu	Arg
6845						6850					6855			
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6875						6880					6885			
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6890						6895					6900			
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Thr Ala Ala Gly Glu Ala Ala Gly Leu Glu Ala Glu Leu Arg Gly
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<212> DNA

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 Gly Gly Gly Phe Leu Asp Gly Ala Thr Ala Phe Asp Pro Gly Phe Phe
 100 105 110
 Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Gln
 115 120 125
 Leu Leu Glu Thr Ser Trp Glu Val Phe Glu Arg Ala Gly Ile Asp Pro
 130 135 140
 Ala Ala Val Arg Gly Ser Arg Thr Gly Val Tyr Val Gly Ala Gly Ala
 145 150 155 160
 Met Gly Tyr Gly Ala Asp Leu Lys Glu Ala Pro Glu Gly Leu Glu Gly
 165 170 175
 Leu Leu Leu Thr Gly Gly Ala Thr Ser Val Leu Ser Gly Arg Val Ser
 180 185 190
 Tyr Val Phe Gly Leu Glu Gly Pro Ala Ala Thr Val Asp Thr Ala Cys
 195 200 205
 Ser Ser Ser Leu Val Ala Leu His Leu Ala Thr Gln Ala Leu Arg Gln
 210 215 220
 Arg Glu Cys Ser Leu Ala Leu Val Gly Gly Val Cys Val Met Pro Ser
 225 230 235 240
 Pro Asp Val Phe Val Glu Phe Ser Arg Gln Arg Gly Leu Ser Pro Asp
 245 250 255
 Gly Arg Cys Lys Ser Phe Ala Ala Ser Ala Asp Gly Thr Gly Trp Ser
 260 265 270
 Glu Gly Val Gly Val Leu Leu Val Glu Arg Leu Ser Asp Ala Arg Arg
 275 280 285
 Asn Gly His Pro Val Leu Ala Val Val Arg Gly Ser Ala Val Asn Gln
 290 295 300
 Asp Gly Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ala Gln Gln
 305 310 315 320
 Arg Val Ile Arg Gln Ala Leu Glu Asn Ala Arg Leu Ser Ala Ala Glu
 325 330 335
 Val Asp Val Val Glu Ala His Gly Thr Gly Thr Thr Leu Gly Asp Pro
 340 345 350
 Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Asp Arg Pro Glu
 355 360 365
 Gly Arg Pro Leu Arg Leu Gly Ser Leu Lys Ser Asn Ile Gly His Thr
 370 375 380

Gln Ala Ala Ala Gly Val Ala Gly Ile Ile Lys Met Val Met Ala Met
 385 390 395 400
 Arg His Gly Val Leu Pro Gln Thr Leu His Val Asp Glu Pro Thr Pro
 405 410 415
 Asn Val Asp Trp Thr Ala Gly Ala Val Ser Leu Leu Thr Glu Pro Met
 420 425 430
 Pro Trp Pro Glu Thr Gly Ala Pro Arg Arg Ala Ala Val Ser Ala Phe
 435 440 445
 Gly Val Ser Gly Thr Asn Ala His Thr Ile Ile Glu Gln Ala Pro Glu
 450 455 460
 Pro Asp Ala Glu Ser Val Ser Val Ser Gly Ser Ala Pro Ala Ala Ala
 465 470 475 480
 Pro Ala Val Pro Thr Pro Val Pro Thr Leu Val Pro Ala Val Leu Pro
 485 490 495
 Trp Thr Leu Ser Gly Arg Ser Thr Ala Ala Leu Arg Ala Gln Ala Ala
 500 505 510
 Arg Leu Leu Thr Thr Gln Gly Gln Asp Gly Ala Thr Glu Pro Gly Arg
 515 520 525
 Pro Leu Asp Ile Gly Tyr Ser Leu Ala Thr Thr Arg Ala Ala Leu Glu
 530 535 540
 His Arg Ala Val Leu Leu Gly Arg Thr Glu Asp Asp Phe Ala Ala Ala
 545 550 555 560
 Leu Ser Ala Leu Ala Glu Gly Ala Glu Ser Ala Gly Leu Val Gln Gly
 565 570 575
 Arg Val Thr Glu Gly Gly Leu Ala Phe Leu Phe Thr Gly Gln Gly Ser
 580 585 590
 Gln Arg Leu Gly Met Gly Arg Glu Leu Tyr Glu Ala Tyr Pro Val Phe
 595 600 605
 Ala Asp Ala Leu Asp Ala Val Cys Ala Arg Leu Glu Leu Pro Leu Lys
 610 615 620
 Asp Val Leu Phe Gly Ala Asp Ala Gly Leu Leu Asp Glu Thr Ala Tyr
 625 630 635 640
 Thr Gln Pro Ala Leu Phe Ala Val Glu Val Ala Leu Phe Arg Leu Val
 645 650 655
 Glu Ser Trp Gly Val Lys Pro Asp Phe Val Ala Gly His Ser Ile Gly
 660 665 670
 Glu Ile Ala Ala Ala His Val Ala Gly Val Phe Ser Leu Glu Asp Ala
 675 680 685
 Cys Ala Leu Val Ser Ala Arg Gly Arg Leu Met Gly Ala Leu Pro Ala
 690 695 700

Gly Gly Val Met Ile Ala Val Gln Ala Ser Glu Ala Glu Val Leu Pro
 705 710 715 720
 Leu Leu Thr Asp Arg Val Ser Ile Ala Ala Ile Asn Gly Pro Gln Ser
 725 730 735
 Val Val Ile Ala Gly Asp Glu Ala Asp Ala Val Ala Ile Ala Gly Ser
 740 745 750
 Phe Ala Asp Arg Lys Ser Lys Arg Leu Thr Val Ser His Ala Phe His
 755 760 765
 Ser Pro His Met Asp Gly Met Leu Glu Asp Phe Arg Leu Val Ala Glu
 770 775 780
 Gly Leu Ser Tyr Glu Ala Pro Arg Ile Pro Val Val Ser Asn Leu Thr
 785 790 795 800
 Gly Ala Leu Val Ser Asp Glu Met Gly Ser Ala Glu Phe Trp Val Arg
 805 810 815
 His Val Arg Glu Ala Val Arg Phe Leu Asp Gly Ile Arg Thr Leu Glu
 820 825 830
 Ala Ala Gly Val Thr Lys Tyr Val Glu Leu Gly Pro Asp Gly Val Leu
 835 840 845
 Ser Ala Met Ala Gln Asp Cys Val Ser Gly Glu Gly Ser Val Phe Ile
 850 855 860
 Pro Val Leu Arg Lys Ala Arg Pro Glu Ala Glu Ser Val Thr Thr Ala
 865 870 875 880
 Leu Ala Thr Ala His Val His Gly Ile Pro Val Asp Trp Gln Ala Phe
 885 890 895
 Tyr Ala Gly Thr Gly Ala Gln Arg Val Asp Leu Pro Thr Tyr Ala Phe
 900 905 910
 Gln His Glu Arg Tyr Trp Leu Glu Pro Ala Thr Gly Gly Ala Gly Asp
 915 920 925
 Val Ser Gly Ala Gly Leu Asp Pro Ala Gly His Pro Leu Leu Gly Ala
 930 935 940
 Ala Val Thr Leu Ala Gly Ser Asp Ser Val Leu Phe Thr Gly Arg Leu
 945 950 955 960
 Ser Leu Arg Thr Gln Pro Trp Leu Ala Asp His Thr Val Ser Gly Thr
 965 970 975
 Thr Val Leu Pro Gly Ala Ala Phe Val Glu Leu Ala Val Arg Ala Gly
 980 985 990
 Asp Gln Ala Gly Cys Glu Arg Val Glu Ala Leu Val Leu Asp Ala Pro
 995 1000 1005
 Leu Ala Leu Pro Ala Glu Gly Ala Val Arg Val Gln Val Leu Val
 1010 1015 1020

Glu	Ala	Pro	Asp	Glu	Gln	Gly	Arg	Arg	Pro	Phe	Thr	Val	Ser	Ser
1025						1030					1035			
Gln	Pro	Glu	Thr	Ala	Pro	Ala	Asp	Thr	Pro	Trp	Gly	Arg	His	Ala
1040						1045					1050			
Arg	Gly	Val	Leu	Ala	Pro	Thr	Ala	Pro	Ala	Pro	Ser	Phe	Asp	Leu
1055						1060					1065			
Ala	Gln	Trp	Pro	Pro	Ala	Gly	Ala	Glu	Ala	Val	Asp	Ile	Thr	Asp
1070						1075					1080			
Leu	Tyr	Ala	Ser	His	Asp	Thr	Pro	Gly	Ala	His	Gly	Pro	Glu	Arg
1085						1090					1095			
Gly	Gly	Leu	Phe	Arg	Ala	Val	Glu	Ala	Val	Trp	Arg	Cys	Asp	Gly
1100						1105					1110			
Asp	Leu	Phe	Ala	Glu	Val	Arg	Leu	Pro	Glu	Gly	Gly	Pro	Asp	Ala
1115						1120					1125			
Gln	Ala	Phe	Gly	Leu	His	Pro	Ala	Leu	Leu	Asp	Ala	Ala	Ala	His
1130						1135					1140			
Ala	Ala	Ser	Val	Leu	Asp	Glu	Gln	His	Gly	Thr	Gly	Ala	Gly	Leu
1145						1150					1155			
Gly	Thr	Trp	Ser	Asp	Val	Thr	Leu	His	Ala	Val	Gly	Ala	Gly	Ala
1160						1165					1170			
Leu	Arg	Val	Arg	Ile	Arg	Ser	Ala	Leu	Asp	Gly	Thr	Val	Gly	Leu
1175						1180					1185			
Asp	Leu	Ala	Asp	Asp	Leu	Gly	Glu	Pro	Val	Ala	Thr	Val	Gly	Gly
1190						1195					1200			
Leu	Thr	Pro	Arg	Pro	Phe	Ala	Gln	Ala	Gly	Ser	Gly	Gly	Gln	Val
1205						1210					1215			
Val	Gln	His	Asp	Ala	Leu	Phe	Gln	Leu	Asp	Trp	Val	Arg	Leu	Pro
1220						1225					1230			
Leu	Ala	Asp	Arg	Ser	Ser	Ala	Pro	Thr	Gly	Glu	Trp	Ala	Val	Leu
1235						1240					1245			
Gly	Ser	Ala	Asp	Gly	Phe	Ala	Asp	Leu	Glu	Ala	Leu	Gly	Ala	Ala
1250						1255					1260			
Val	Asp	Ala	Gly	Ala	Pro	Val	Pro	Pro	Tyr	Val	Val	Val	Pro	Leu
1265						1270					1275			
Glu	Arg	Gln	Ala	Thr	Gly	Asn	Gly	Ser	Asp	Ala	Leu	His	Glu	Ala
1280						1285					1290			
Val	His	Arg	Ala	Leu	Ala	Leu	Val	Arg	Ser	Trp	Leu	Asp	Asp	Gln
1295						1300					1305			
Arg	Phe	Glu	Thr	Ser	Arg	Leu	Val	Val	Leu	Thr	Arg	Gly	Ala	Val
1310						1315					1320			

Ala Gly Pro Gly Glu Gly Val	Glu Asp Leu Pro His	Ala Ala Val
1325	1330	1335
Trp Gly Leu Val Arg Ser Ala	Glu Thr Glu Asn Pro	Gly Arg Phe
1340	1345	1350
Val Leu Ala Asp Val Asp Val	Asp Leu Asp Ala Asp	Leu Gly Ser
1355	1360	1365
Gly Val Gly Leu Ala Ala Val	Leu Ala Ser Gly Glu	Pro Glu Leu
1370	1375	1380
Leu Leu Arg Asp Gly Val Val	His Ala Pro Arg Leu	Asn Arg Ala
1385	1390	1395
Arg Thr Ala Thr Ser Ser Asp	Ala Pro Gly Ile Asp	Pro Ala Gly
1400	1405	1410
Thr Val Leu Ile Thr Gly Gly	Ser Gly Thr Leu Ala	Gly Ile Val
1415	1420	1425
Ala Arg His Leu Ala Thr Ala	His Gly Val Arg Arg	Leu Leu Leu
1430	1435	1440
Leu Ser Arg Arg Gly Ala Asp	Ala Pro Gly Ala Gly	Glu Leu Thr
1445	1450	1455
Ala Glu Leu Ala Gly Leu Gly	Ala Gln Val Ser Trp	Ala Ala Cys
1460	1465	1470
Asp Ala Gly Asp Arg Asp Ala	Leu Ala Ala Val Leu	Ala Ala Val
1475	1480	1485
Pro Ala Ala His Pro Leu Thr	Ala Val Val His Thr	Ala Gly Val
1490	1495	1500
Leu Asp Asp Gly Val Ile Gly	Ser Leu Thr Pro Glu	Arg Leu Asp
1505	1510	1515
Thr Val Leu Arg Pro Lys Ala	Asp Ala Ala Leu His	Leu His Glu
1520	1525	1530
Leu Thr Arg Asp Leu Pro Leu	Thr Ala Phe Val Leu	Phe Ser Ala
1535	1540	1545
Ile Ala Gly Thr Leu Gly Ser	Ala Gly Gln Ala Asn	Tyr Ala Ala
1550	1555	1560
Ala Asn Val Phe Leu Asp Ala	Leu Ala Gln His Arg	His Asp Gln
1565	1570	1575
Asp Leu Pro Ala Thr Ser Leu	Ala Trp Gly Leu Trp	Ala Asp Ala
1580	1585	1590
Ser Gly Met Thr Gly Gly Leu	Asp Glu Ala Gln Leu	Arg Arg Met
1595	1600	1605
Glu Gln His Gly Met Gly Thr	Leu Ser Ala Thr Asp	Gly Met Ala
1610	1615	1620

Leu Phe Asp Ala Ala Leu Ala Ala Gly Arg Pro Val Leu Val Pro
 1625 1630 1635
 Ala Arg Leu His Leu Pro Gly Leu Arg Asn Ala Ala Gly Pro Gly
 1640 1645 1650
 Pro Val Ala Pro Val Phe Arg Ser Leu Leu Gly Ala Ser Gly Arg
 1655 1660 1665
 Arg Ala Ala Arg Thr Arg Thr Asp Gly Gly Thr Pro Leu Ala Glu
 1670 1675 1680
 Arg Leu Thr Arg Leu Ala Gly Pro Glu Gln Asp Arg Ala Leu Leu
 1685 1690 1695
 Asp Leu Val Arg Ala Gln Val Ala Ser Val Leu Gly His Ala Ser
 1700 1705 1710
 Ala Glu Gln Val Asp Pro Ala Arg Ala Phe Lys Asp Leu Gly Phe
 1715 1720 1725
 Asp Ser Leu Thr Ala Val Glu Leu Arg Asn Arg Leu Gly Ala Ala
 1730 1735 1740
 Thr Gly Leu Arg Leu Pro Thr Thr Leu Val Phe Asp His Pro Thr
 1745 1750 1755
 Pro Thr Ala Leu Val Arg His Leu Arg Thr Asp Leu Leu Gly Ala
 1760 1765 1770
 Ala Pro Asp Pro Gly Ala Asp Ala Pro Gly Leu Pro Ala Arg Val
 1775 1780 1785
 Gly Leu Ala Asp Asp Pro Ile Ala Ile Val Ala Met Ser Cys Arg
 1790 1795 1800
 Tyr Pro Gly Gly Val Arg Thr Pro Glu Glu Leu Trp Arg Leu Val
 1805 1810 1815
 Glu Thr Gly Gly Asp Ala Ile Ala Gly Leu Pro Gly Asn Arg Gly
 1820 1825 1830
 Trp Asp Thr Asp Ala Leu His Ala Asp Glu Asp Gly Arg Thr Phe
 1835 1840 1845
 Ala Gly Gly Phe Leu Tyr Asp Ala Asp Ser Phe Asp Ala Asp Phe
 1850 1855 1860
 Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln
 1865 1870 1875
 Arg Leu Leu Leu Glu Thr Ser Trp Glu Ala Ile Glu Arg Ala Gly
 1880 1885 1890
 Ile Asp Pro Ser Ser Leu Arg Gly Ser Arg Ala Gly Val Phe Val
 1895 1900 1905
 Gly Ala Ala Tyr Ser Gly Tyr Asp Ala Gln Leu Glu Gln Ser Gly
 1910 1915 1920

Val Asp Gly Val Leu Gly His Val Met Thr Gly Asn Ala Gly Ser
 1925 1930 1935
 Val Met Ser Gly Arg Val Ser Tyr Ala Leu Gly Leu Glu Gly Pro
 1940 1945 1950
 Ala Val Thr Val Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Leu
 1955 1960 1965
 His Trp Ala Ile Gln Ala Leu Arg Asn Gly Glu Cys Ser Leu Ala
 1970 1975 1980
 Leu Ala Gly Gly Val Thr Val Met Ser Thr Pro Gly Thr Phe Ser
 1985 1990 1995
 Glu Phe Ser Gln Gln Gly Gly Leu Ser Pro Asp Gly Arg Cys Lys
 2000 2005 2010
 Ala Phe Ala Ser Ala Ala Asp Gly Thr Gly Trp Gly Glu Gly Val
 2015 2020 2025
 Gly Met Leu Leu Val Glu Arg Leu Ser Asp Ala Arg Arg Asn Gly
 2030 2035 2040
 His Pro Val Leu Ala Val Val Arg Gly Ser Ala Val Asn Gln Asp
 2045 2050 2055
 Gly Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ser Gln Gln
 2060 2065 2070
 Arg Val Ile Arg Ala Ala Leu Ala Ser Ala Gly Leu Ser Ala Ala
 2075 2080 2085
 Asp Val Asp Val Val Glu Ala His Gly Thr Gly Thr Lys Leu Gly
 2090 2095 2100
 Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Asp
 2105 2110 2115
 Arg Pro Asp Gly Arg Pro Leu Trp Leu Gly Ser Ile Lys Ser Asn
 2120 2125 2130
 Ile Gly His Thr Gln Ala Ala Ala Gly Val Ala Gly Ile Ile Lys
 2135 2140 2145
 Met Val Met Ala Met Arg His Gly Val Leu Pro Arg Thr Leu His
 2150 2155 2160
 Val Asp Glu Pro Thr Ser His Val Asp Trp Ser Ala Gly Glu Val
 2165 2170 2175
 Ser Leu Leu Ser Glu Ser Ala Glu Trp Pro Leu Thr Glu Arg Pro
 2180 2185 2190
 Arg Arg Ala Gly Val Ser Ser Phe Gly Ile Ser Gly Thr Asn Ala
 2195 2200 2205
 His Thr Ile Ile Glu Gln Ala Pro Glu Thr Gly Thr Glu Ala Glu
 2210 2215 2220

Pro	Ser	Ala	Glu	Thr	Leu	Thr	His	Gly	Thr	Val	Pro	Tyr	Val	Leu
	2225					2230					2235			
Ser	Ala	Lys	Ser	Ser	Asp	Ala	Leu	Arg	Ala	Gln	Ala	Arg	Gln	Leu
	2240					2245					2250			
Leu	Ala	Val	Val	Glu	Ala	Ala	Glu	Ser	Pro	Arg	Val	Ala	Asp	Leu
	2255					2260					2265			
Ala	Tyr	Ser	Leu	Ala	Thr	Ser	Arg	Ala	Gly	Leu	Asp	His	Arg	Ala
	2270					2275					2280			
Ala	Leu	Val	Ala	Asp	Asp	Arg	Glu	Asn	Leu	Thr	Arg	Ala	Leu	Ala
	2285					2290					2295			
Ala	Leu	Ala	Ala	Asp	Glu	Gln	Val	Pro	Gly	Leu	Val	Arg	Gly	Thr
	2300					2305					2310			
Ala	Thr	Gly	Gly	Gly	Leu	Ala	Phe	Leu	Phe	Thr	Gly	Gln	Gly	Ser
	2315					2320					2325			
Gln	Arg	Leu	Gly	Met	Gly	Arg	Glu	Leu	Tyr	Glu	Thr	Tyr	Pro	Val
	2330					2335					2340			
Phe	Ala	Arg	Ala	Leu	Asp	Ala	Val	Asp	Ala	Arg	Leu	Glu	Leu	Pro
	2345					2350					2355			
Met	Lys	Glu	Val	Leu	Phe	Gly	Ala	Asp	Ala	Asp	Leu	Leu	Asn	Glu
	2360					2365					2370			
Thr	Ala	His	Thr	Gln	Pro	Ala	Leu	Phe	Ala	Val	Glu	Val	Ala	Leu
	2375					2380					2385			
Phe	Arg	Leu	Leu	Glu	Ser	Trp	Gly	Val	Arg	Pro	Asp	Val	Leu	Ala
	2390					2395					2400			
Gly	His	Ser	Ile	Gly	Glu	Ile	Ala	Ala	Ala	His	Val	Ala	Gly	Val
	2405					2410					2415			
Phe	Ser	Leu	Asp	Asp	Ala	Cys	Thr	Leu	Val	Glu	Ala	Arg	Gly	Arg
	2420					2425					2430			
Leu	Met	Gln	Ala	Leu	Pro	Thr	Gly	Gly	Val	Met	Ile	Ala	Val	Gln
	2435					2440					2445			
Ala	Ser	Glu	Asp	Glu	Val	Leu	Pro	Leu	Leu	Thr	Gly	Gln	Val	Ser
	2450					2455					2460			
Ile	Ala	Ala	Ile	Asn	Gly	Pro	Gln	Ser	Val	Val	Ile	Ala	Gly	Asp
	2465					2470					2475			
Glu	Ala	Asp	Ala	Val	Ala	Ile	Ala	Glu	Ser	Phe	Thr	Asp	Arg	Lys
	2480					2485					2490			
Ser	Lys	Arg	Leu	Thr	Val	Ser	His	Ala	Phe	His	Ser	Pro	His	Met
	2495					2500					2505			
Asp	Gly	Met	Leu	Ala	Asp	Phe	Arg	Lys	Val	Ala	Glu	Gly	Leu	Val
	2510					2515					2520			

Tyr	Glu	Asn	Pro	Arg	Ile	Pro	Ile	Val	Ser	Asn	Leu	Thr	Gly	Thr
	2525					2530					2535			
Leu	Val	Thr	Asp	Glu	Met	Ala	Ser	Ala	Asp	Phe	Trp	Val	Arg	His
	2540					2545					2550			
Val	Arg	Glu	Ala	Val	Arg	Phe	Leu	Asp	Gly	Ile	Arg	Ala	Leu	Glu
	2555					2560					2565			
Ser	Arg	Gly	Val	Thr	Thr	Tyr	Ile	Glu	Leu	Gly	Pro	Asp	Gly	Val
	2570					2575					2580			
Leu	Ser	Ala	Leu	Ala	Gln	Asp	Cys	Leu	Thr	Ala	Gly	Thr	Gly	Thr
	2585					2590					2595			
Gly	Thr	Ala	Ile	Phe	Ala	Pro	Val	Leu	Arg	Ala	Ala	Arg	Pro	Glu
	2600					2605					2610			
Ala	Glu	Ser	Val	Thr	Thr	Ala	Leu	Ala	Thr	Ala	His	Val	His	Gly
	2615					2620					2625			
Thr	Pro	Val	Asp	Trp	Arg	Ala	Tyr	Phe	Ala	Gly	Thr	Gly	Ala	Arg
	2630					2635					2640			
Arg	Ala	Asp	Leu	Pro	Thr	Tyr	Pro	Phe	Gln	Gly	Arg	Arg	Tyr	Trp
	2645					2650					2655			
Pro	Glu	Ala	Ala	Ala	Pro	Ser	Gly	Ala	Ala	Ala	Gly	Leu	Gly	Asp
	2660					2665					2670			
Gln	Ala	Val	Asp	Ala	Arg	Phe	Trp	Asp	Ala	Val	Glu	Arg	Ala	Asp
	2675					2680					2685			
Leu	Gly	Ser	Leu	Ile	Gly	Gly	Pro	Glu	Ile	Asp	Gly	Asp	Gln	Pro
	2690					2695					2700			
Leu	Ser	Ser	Val	Leu	Pro	Ala	Leu	Ser	Asp	Trp	Arg	Arg	Asn	Gln
	2705					2710					2715			
Gln	Ala	Gln	Ser	Gln	Ala	Asp	Ala	Arg	Leu	Tyr	Arg	Ile	Ala	Trp
	2720					2725					2730			
Gln	Pro	Trp	Ser	Gly	Ala	Gly	Arg	Gly	Thr	Pro	Ala	Gly	Thr	Trp
	2735					2740					2745			
Leu	Val	Ala	Val	Pro	Ala	Pro	Tyr	Ala	Asp	Asp	Pro	Trp	Val	Arg
	2750					2755					2760			
Ala	Leu	Thr	Asp	Arg	Met	Ala	Glu	Gly	Gly	Ala	Glu	Val	Val	Pro
	2765					2770					2775			
Leu	Thr	Leu	Asp	Val	Ala	Asp	Ser	Asp	Pro	Ala	Ser	Leu	Arg	Ala
	2780					2785					2790			
Arg	Leu	Asp	Glu	Arg	Leu	Arg	Glu	Ala	Val	Gly	Asp	Gly	Pro	Val
	2795					2800					2805			
Ala	Gly	Val	Leu	Ser	Leu	Leu	Ala	Leu	Asp	Glu	Arg	Pro	His	Pro
	2810					2815					2820			

Asp	His	Pro	Ser	Val	Pro	Val	Gly	Leu	Ala	Leu	Thr	Ser	Ala	Leu
	2825					2830					2835			
Thr	Ser	Val	Leu	Thr	Pro	Val	Leu	Thr	Glu	Pro	Asp	Pro	Glu	Gly
	2840					2845					2850			
Gly	Ala	Ser	Gly	Gly	Ile	Glu	Ala	Pro	Leu	Trp	Cys	Val	Thr	Arg
	2855					2860					2865			
Asp	Ala	Val	Ala	Ala	Ala	Gly	Gly	Asp	Glu	Leu	Gly	Gly	Ala	Ala
	2870					2875					2880			
Gln	Ala	Gln	Val	Trp	Gly	Leu	Gly	Arg	Val	Val	Ala	Leu	Glu	His
	2885					2890					2895			
Pro	Asp	Arg	Trp	Gly	Gly	Leu	Val	Asp	Leu	Pro	Ala	Val	Cys	Asp
	2900					2905					2910			
Asp	Arg	Val	Leu	Ser	Arg	Leu	Met	Ala	Val	Leu	Ala	Gly	Ser	Gly
	2915					2920					2925			
Asp	Glu	Asp	Gln	Val	Ala	Val	Arg	Thr	Ser	Gly	Thr	Leu	Val	Arg
	2930					2935					2940			
Arg	Leu	Leu	Arg	Ala	Ala	Pro	Thr	Ser	Val	Pro	Ser	Ala	Pro	Trp
	2945					2950					2955			
Thr	Pro	Arg	Gly	Thr	Val	Leu	Val	Thr	Gly	Gly	Thr	Gly	Ala	Leu
	2960					2965					2970			
Gly	Arg	His	Val	Ala	Arg	His	Leu	Ala	Glu	Arg	Gly	Ala	Glu	Arg
	2975					2980					2985			
Leu	Val	Leu	Val	Ser	Arg	Arg	Gly	Ala	Asp	Ala	Pro	Gly	Ala	Ala
	2990					2995					3000			
Glu	Thr	Glu	Ala	Glu	Leu	Ser	Ala	Phe	Gly	Ala	Ala	Val	Thr	Leu
	3005					3010					3015			
Val	Ala	Cys	Asp	Val	Ala	Asp	Arg	Asp	Ala	Leu	Gly	Thr	Leu	Val
	3020					3025					3030			
Ala	Arg	Leu	Ala	Ala	Asp	Gly	Thr	Pro	Val	Arg	Ala	Val	Val	His
	3035					3040					3045			
Ala	Ala	Gly	Val	Ser	Gln	Pro	Pro	Gly	Thr	Gly	Thr	Asp	Leu	Pro
	3050					3055					3060			
Gly	Phe	Ala	Arg	Val	Val	Ala	Ala	Lys	Thr	Ala	Gly	Ala	Val	His
	3065					3070					3075			
Leu	Asp	Ala	Leu	Phe	Asp	Ala	Pro	Asp	Ser	Leu	Asp	Ala	Phe	Val
	3080					3085					3090			
Leu	Phe	Ser	Ser	Ile	Ala	Gly	Val	Trp	Gly	Ser	Gly	Gly	Gln	Gly
	3095					3100					3105			
Ala	Tyr	Ser	Ala	Ala	Asn	Thr	Phe	Leu	Asp	Thr	Leu	Ala	Glu	Arg
	3110					3115					3120			

Arg	Arg	Ala	Arg	Gly	Leu	Ala	Ala	Thr	Ala	Ile	Ala	Trp	Gly	Pro
	3125					3130					3135			
Trp	Ala	Asp	Gly	Gly	Met	Ala	Thr	Glu	Gly	Asp	Ala	Glu	Glu	Gln
	3140					3145					3150			
Leu	Ser	Arg	Arg	Gly	Leu	Pro	Pro	Met	Asp	Arg	Ala	Thr	Asn	Leu
	3155					3160					3165			
Leu	Ala	Leu	Glu	Arg	Ala	Val	Ala	Gly	Arg	Glu	Ala	Ala	Leu	Thr
	3170					3175					3180			
Val	Ala	Asp	Val	Asp	Trp	Ala	Arg	Phe	Ala	Pro	Val	Phe	Ala	Ala
	3185					3190					3195			
Ala	Arg	Pro	Arg	Pro	Leu	Ile	Gly	Asp	Leu	Pro	Glu	Val	Arg	Asp
	3200					3205					3210			
Ala	Leu	Arg	Gly	Asp	Thr	Pro	Ala	Gly	Glu	Gly	Pro	Ala	Glu	Thr
	3215					3220					3225			
Ala	Ser	Ser	Ala	Val	Leu	Arg	Arg	Leu	Thr	Glu	Leu	Thr	Gly	Ala
	3230					3235					3240			
Asp	Arg	Glu	Thr	Ala	Leu	Leu	Asp	Leu	Val	Arg	Glu	His	Ala	Ala
	3245					3250					3255			
Thr	Ala	Leu	Gly	His	Thr	Ser	Ala	Asp	Ala	Val	Ala	Ala	Glu	Arg
	3260					3265					3270			
Ala	Phe	Lys	Asp	Leu	Gly	Phe	Asp	Ser	Leu	Thr	Ala	Val	Glu	Leu
	3275					3280					3285			
Arg	Asn	Arg	Leu	Gly	Ala	Ala	Cys	Gly	Leu	Arg	Leu	Pro	Ser	Ser
	3290					3295					3300			
Leu	Val	Phe	Asp	Tyr	Pro	Asn	Pro	Gln	Ala	Leu	Thr	Arg	His	Leu
	3305					3310					3315			
Leu	His	Thr	Leu	Phe	Pro	Glu	Gly	Ala	Gly	Gly	Pro	Asp	Val	Pro
	3320					3325					3330			
Ala	Leu	Asp	Thr	Asp	Pro	Gln	Glu	Ala	Glu	Leu	Arg	Arg	Thr	Leu
	3335					3340					3345			
Ala	Ala	Ile	Pro	Leu	Gly	Arg	Ile	Arg	Glu	Ala	Gly	Leu	Leu	Asp
	3350					3355					3360			
Thr	Leu	Leu	Arg	Leu	Ala	Gly	Pro	Asp	Thr	Pro	Ala	Pro	Ala	Thr
	3365					3370					3375			
Ser	Thr	Ala	Asp	Glu	Ser	Glu	Ser	Ile	Asp	Thr	Met	Asp	Leu	Gln
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 Asp Leu Arg Pro Val Asp Ile Ala Gly Ser Leu Ala Val Gly Arg Pro
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 Ser Phe Glu Asp Arg Ala Ala Val Val Ala Ala Asp Arg Glu Gly Leu
 530 535 540
 Leu Ala Gly Leu Ala Ala Leu Ala Asp Gly Gly Ser Ala Thr Gly Leu
 545 550 555 560
 Val Lys Gly Ser Ser Gln Leu Val Gly Lys Leu Ala Phe Leu Phe Thr
 565 570 575
 Gly Gln Gly Ser Gln Arg Leu Gly Met Gly Arg Glu Leu Tyr Glu Thr
 580 585 590
 Tyr Pro Val Phe Ala Gln Ala Leu Asp Ala Val Cys Glu Arg Leu Glu
 595 600 605
 Leu Pro Leu Lys Asn Val Leu Phe Gly Thr Asp Ser Ala Ala Leu Asp
 610 615 620
 Glu Thr Ser Tyr Thr Gln Pro Ala Leu Phe Ala Val Glu Val Ala Leu
 625 630 635 640

Phe Arg Leu Val Glu Ser Trp Gly Leu Lys Pro Asp Phe Leu Ala Gly
645 650 655
His Ser Ile Gly Glu Ile Ala Ala His Val Ala Gly Val Phe Ser
660 665 670
Leu Asp Asp Ala Cys Ala Leu Val Ser Ala Arg Gly Arg Leu Met Gly
675 680 685
Ala Leu Pro Gly Gly Gly Val Met Ile Ala Val Gln Ala Ser Glu Asp
690 695 700
Glu Val Leu Pro Leu Leu Thr Asp Arg Val Ser Ile Ala Ala Ile Asn
705 710 715 720
Gly Pro Gln Ser Val Val Ile Ala Gly Asp Glu Ala Asp Ala Val Ala
725 730 735
Ile Ala Glu Ser Phe Ala Asp Arg Lys Ser Lys Arg Leu Thr Val Ser
740 745 750
His Ala Phe His Ser Pro His Met Asp Gly Met Leu Glu Asp Phe Arg
755 760 765
Val Val Ala Glu Gly Leu Ser Tyr Glu Ala Pro Arg Ile Pro Val Val
770 775 780
Ser Asn Leu Thr Gly Ala Leu Val Ser Asp Glu Met Gly Ser Ala Asp
785 790 795 800
Phe Trp Val Arg His Val Arg Glu Thr Val Arg Phe Leu Asp Gly Ile
805 810 815
Arg Thr Leu Glu Ala Ala Gly Val Thr Lys Tyr Val Glu Leu Gly Pro
820 825 830
Asp Gly Val Leu Ser Ala Leu Ala Gln Asp Cys Val Ser Gly Glu Asp
835 840 845
Ser Val Phe Ile Pro Val Leu Arg Lys Ala Arg Pro Glu Ala Glu Thr
850 855 860
Val Ala Thr Ala Leu Ala Ser Ala His Val His Gly Ile Pro Val Asp
865 870 875 880
Trp Arg Ala Tyr Phe Ala Gly Thr Gly Ala Gln Arg Val Asp Leu Pro
885 890 895
Thr Tyr Pro Phe Gln Arg Gln Arg Tyr Trp Ile Glu Pro Gly Gly Arg
900 905 910
Ala Gly Asp Val Gly Ala Ala Gly Leu Glu Glu Ala Gly His Pro Leu
915 920 925
Leu Gly Ala Ala Val Pro Leu Ala Asp Ser Glu Gly Phe Leu Phe Thr
930 935 940
Gly Arg Leu Gly Arg Thr Ser His Pro Trp Leu Ala Asp His Ala Val
945 950 955 960

Met Asp Thr Val Leu Leu Pro Gly Thr Ala Phe Val Asp Leu Ala Val
 965 970 975

Arg Ala Gly Asp Gln Val Gly Cys Asp Val Val Glu Glu Leu Thr Leu
 980 985 990

Glu Ala Pro Leu Val Leu Pro Glu Arg Gly Ala Val Gln Ile Gln Met
 995 1000 1005

His Val Gly Ala Pro Asp Ala Asp Gly Thr Gly Arg Arg Thr Phe
 1010 1015 1020

Thr Leu Ser Ser Arg Thr Gln Asp Gly Ala Ala Asp Glu Pro Trp
 1025 1030 1035

Thr Arg His Ala Gly Gly Val Leu Ala His Gly Ala Ala Gln Pro
 1040 1045 1050

Ala Phe Ala Pro Val Gln Trp Pro Pro Ala Gly Ala Glu Pro Ile
 1055 1060 1065

Pro Thr Glu Ser Leu Tyr Ala Asp Leu Ala Glu Val Gly Met Gly
 1070 1075 1080

Tyr Gly Pro Ala Phe Arg Gly Leu Thr Ala Ala Trp Arg His Gly
 1085 1090 1095

Glu Ser Val Tyr Val Glu Val Ala Leu Pro Glu Glu Thr Ala Ser
 1100 1105 1110

Thr Ala Arg Asp Phe Gly Leu His Pro Ala Leu Leu Asp Ala Ala
 1115 1120 1125

Leu His Ala Leu Gly Leu Gly Val Leu Gly Gly Val Glu Gly Glu
 1130 1135 1140

Gly Arg Leu Pro Phe Ala Trp Ser Gly Val Thr Leu His Ala Ala
 1145 1150 1155

Gly Ala Asp Ala Leu Arg Val His Leu Ala Pro Ala Gly Ala His
 1160 1165 1170

Gly Val Arg Leu Glu Ile Ala Asp Ala Ala Gly Ala Pro Val Ala
 1175 1180 1185

Thr Val Asp Ser Leu Val Leu Arg Thr Val Ser Glu Glu Gln Val
 1190 1195 1200

Arg Ala Ala Arg Thr Ala Tyr His Glu Ser Val Phe Arg Ala Glu
 1205 1210 1215

Trp Thr Ala Leu Pro Thr Ala Ala Glu Ser Ala Ala Thr His Gly
 1220 1225 1230

Arg Trp Ala Val Leu Gly Ala Ala Asp Ala Gly Asp Ser Pro Arg
 1235 1240 1245

Asp Ala Leu Val Asn Gly Leu Leu Gly His Leu Pro Gly Glu Val
 1250 1255 1260

Ala	Arg	Tyr	Ala	Asp	Leu	Ala	Glu	Leu	Ala	Ala	Ala	Val	Glu	Ala
1265						1270						1275		
Gly	Ala	Ala	Thr	Pro	Asp	Ala	Val	Phe	Ala	Ala	Tyr	Ala	Arg	Ser
1280						1285					1290			
Asp	Asp	Asp	Gly	Pro	Ala	Ala	Pro	Asp	Val	Ser	Ala	Pro	Asp	Val
1295						1300					1305			
Ser	Ala	Gln	Ala	Val	His	Ala	Ala	Thr	His	Asp	Ala	Leu	Ala	Leu
1310						1315					1320			
Val	Gln	Thr	Trp	Phe	Gly	Glu	Glu	Pro	Phe	Ala	Gly	Asp	Arg	Phe
1325						1330					1335			
Ala	Ala	Thr	Arg	Leu	Val	Val	Leu	Thr	Arg	Gly	Ala	Val	Ala	Ala
1340						1345					1350			
Gly	Asp	Gly	Asp	Thr	Val	Thr	Asp	Pro	Ala	His	Ala	Ala	Val	Trp
1355						1360					1365			
Gly	Leu	Leu	Arg	Ser	Ala	Gln	Ser	Glu	Tyr	Pro	Asp	Arg	Leu	Leu
1370						1375					1380			
Leu	Ile	Asp	Thr	Asp	Gly	Val	Glu	Asp	Ser	Val	His	Ala	Leu	Pro
1385						1390					1395			
Ala	Val	Leu	Ala	Val	Gly	Glu	Pro	Gln	Leu	Ala	Leu	Arg	Ala	Gly
1400						1405					1410			
Ser	Val	His	Ala	Leu	Arg	Leu	Ala	Arg	Val	Ala	Ala	Ala	Thr	Pro
1415						1420					1425			
Glu	Asp	Ala	Ala	Ala	Pro	Thr	Gln	Tyr	Ala	Pro	Gly	Ser	Thr	Val
1430						1435					1440			
Leu	Ile	Thr	Gly	Ala	Gly	Gly	Met	Leu	Gly	Gly	Leu	Ile	Ala	Arg
1445						1450					1455			
Arg	Leu	Val	Ala	Glu	His	Gly	Val	Arg	His	Leu	Leu	Leu	Val	Gly
1460						1465					1470			
Arg	Arg	Gly	Ala	Ala	Ala	Pro	Gly	Ala	Glu	Gln	Leu	Ser	Ala	Glu
1475						1480					1485			
Leu	Ala	Glu	Ala	Gly	Ala	Ser	Val	Thr	Trp	Ala	Ala	Cys	Asp	Val
1490						1495					1500			
Ala	Asp	Arg	Asp	Ala	Leu	Ser	Ala	Val	Leu	His	Ala	Ile	Pro	Ala
1505						1510					1515			
Glu	His	Pro	Leu	Gly	Ala	Val	Val	His	Thr	Ala	Gly	Val	Leu	Asp
1520						1525					1530			
Asp	Gly	Val	Ile	Ala	Ser	Leu	Thr	Pro	Glu	Arg	Leu	Ser	Ala	Val
1535						1540					1545			
Leu	Arg	Pro	Lys	Val	Asp	Ala	Ala	Cys	Asn	Leu	His	Glu	Leu	Thr
1550						1555					1560			

Arg His Leu Asp Leu Thr Ala Phe Val Leu Phe Ser Ser Ile Gly
 1565 1570 1575
 Gly Val Phe Gly Gly Pro Gly Gln Gly Asn Tyr Ala Ala Ala Asn
 1580 1585 1590
 Val Phe Leu Asp Ala Leu Ala Gln His Arg Arg Ser Gln Gly Leu
 1595 1600 1605
 Ala Ala Thr Ser Leu Ala Trp Ala Leu Trp Ala Asp Ser Thr Gly
 1610 1615 1620
 Met Ala Gly Ser Leu Asp Glu Ala Asp Ile Ser Arg Met Arg Arg
 1625 1630 1635
 Gly Gly Leu Pro Pro Leu Thr Thr Ala Glu Gly Leu Glu Leu Phe
 1640 1645 1650
 Asp Leu Ala His Arg Ile Asp Glu Ala Ala Pro Val Leu Met Arg
 1655 1660 1665
 Ala Asp Leu Thr Ala Leu Arg Thr Gln Ala Gln Ala Gly Thr Met
 1670 1675 1680
 Ser Pro Leu Leu Arg Gly Leu Val Arg Val Pro Ala Arg Arg Ser
 1685 1690 1695
 Ala Ser Gly Ala Ala Gly Thr Gly Gly Glu Ser Gly Leu Arg Glu
 1700 1705 1710
 Arg Leu Ala Gly Leu Ser Ala Ala Glu Arg Asp Arg Thr Leu Leu
 1715 1720 1725
 Asp Leu Val Arg Lys Gln Val Ala Ala Ala Leu Gly Tyr Pro Gly
 1730 1735 1740
 Pro Ser Ala Val Glu Pro Gly Arg Ser Phe Lys Glu Leu Gly Phe
 1745 1750 1755
 Asp Ser Leu Thr Ala Val Glu Leu Arg Asn Leu Leu Gly Asp Ala
 1760 1765 1770
 Thr Gly Arg Arg Leu Pro Ala Thr Leu Val Phe Asp Tyr Pro Thr
 1775 1780 1785
 Ala Thr Ala Leu Ala Gly Tyr Leu Arg Glu Glu Ile Ile Gly Asp
 1790 1795 1800
 Leu Ala Asp Ala Val Thr Ala Pro Ala Leu Val Pro Ser Ala Ala
 1805 1810 1815
 Val Ala Gly Ala Gly Ala Gly Ala Asp Asp Asp Asp Pro Ile Ala
 1820 1825 1830
 Ile Val Ala Met Ser Cys Arg Phe Pro Gly Gly Ile Ala Ser Pro
 1835 1840 1845
 Glu Asp Leu Trp Gln Leu Leu Val Thr Gly Arg Asp Gly Ile Thr
 1850 1855 1860

Gly	Phe	Pro	Ala	Asp	Arg	Gly	Trp	Asp	Leu	Asp	Ser	Leu	Tyr	Ser
1865						1870					1875			
Asp	Asp	Pro	Asp	Arg	Glu	Gly	Thr	Ser	Tyr	Ala	Arg	Glu	Gly	Gly
1880						1885					1890			
Phe	Leu	His	Glu	Ala	Ala	Glu	Phe	Asp	Ala	Ser	Phe	Phe	Gly	Ile
1895						1900					1905			
Ser	Pro	Arg	Glu	Ala	Leu	Ala	Met	Asp	Pro	Gln	Gln	Arg	Leu	Leu
1910						1915					1920			
Leu	Glu	Thr	Thr	Trp	Glu	Thr	Phe	Glu	Arg	Ala	Gly	Ile	Asp	Pro
1925						1930					1935			
Thr	Ser	Leu	Arg	Gly	Ser	Arg	Thr	Gly	Val	Phe	Val	Gly	Ser	Asn
1940						1945					1950			
Ala	Gln	Asp	Tyr	Leu	Gln	Leu	Trp	Leu	Asn	Asp	Ala	Asp	Gly	Leu
1955						1960					1965			
Glu	Gly	His	Leu	Gly	Thr	Gly	Asn	Ala	Ala	Ser	Val	Val	Ser	Gly
1970						1975					1980			
Arg	Leu	Ser	Tyr	Thr	Phe	Gly	Leu	Glu	Gly	Pro	Ala	Val	Thr	Val
1985						1990					1995			
Asp	Thr	Ala	Cys	Ser	Ser	Ser	Leu	Val	Thr	Leu	His	Leu	Ala	Ala
2000						2005					2010			
Gln	Ala	Leu	Arg	Arg	Gly	Glu	Cys	Ser	Met	Ala	Leu	Ala	Gly	Ala
2015						2020					2025			
Val	Thr	Ile	Met	Ser	Thr	Pro	Gly	Ala	Phe	Thr	Glu	Phe	Ser	Arg
2030						2035					2040			
Gln	Arg	Gly	Leu	Ala	Ala	Asp	Gly	Arg	Ile	Lys	Ala	Phe	Ala	Ala
2045						2050					2055			
Ala	Ala	Asp	Gly	Thr	Ser	Trp	Ser	Glu	Gly	Val	Gly	Leu	Leu	Leu
2060						2065					2070			
Val	Glu	Arg	Leu	Ser	Asp	Ala	Arg	Arg	Asn	Gly	His	Pro	Val	Leu
2075						2080					2085			
Ala	Val	Val	Arg	Gly	Thr	Ala	Val	Asn	Gln	Asp	Gly	Ala	Ser	Asn
2090						2095					2100			
Gly	Leu	Thr	Ala	Pro	Asn	Gly	Pro	Ser	Gln	Gln	Arg	Val	Ile	Arg
2105						2110					2115			
Glu	Ala	Leu	Ala	Asp	Ala	Gly	Leu	Ser	Ala	Ala	Glu	Val	Asp	Ala
2120						2125					2130			
Val	Glu	Ala	His	Gly	Thr	Gly	Thr	Thr	Leu	Gly	Asp	Pro	Ile	Glu
2135						2140					2145			
Ala	Gln	Ala	Leu	Leu	Ala	Thr	Tyr	Gly	Gln	Gly	Arg	Pro	Asp	Asp
2150						2155					2160			

Gln Pro Leu Trp Leu Gly Ser Val Lys Ser Asn Ile Gly His Thr
 2165 2170 2175
 Gln Ala Val Ala Gly Ala Ala Gly Ile Ile Lys Met Val Met Ala
 2180 2185 2190
 Met Arg His Gly Val Leu Pro Gln Thr Leu His Ile Asp Glu Pro
 2195 2200 2205
 Thr Pro Tyr Val Asp Trp Ser Ala Gly Asp Ile Ala Leu Leu Thr
 2210 2215 2220
 Glu Gln Arg Ala Trp Pro Glu Thr Gly Arg Pro Arg Arg Ala Gly
 2225 2230 2235
 Val Ser Ser Phe Gly Tyr Ser Gly Thr Asn Ala His Ala Val Ile
 2240 2245 2250
 Glu Gln Ala Pro Gln Asn Ala Met Glu Arg Thr Pro Gln Gly Asp
 2255 2260 2265
 Asn Leu Pro Ala Arg Thr Pro Ala Thr Arg Thr Leu Pro Val Leu
 2270 2275 2280
 Pro Leu Leu Val Ser Gly Arg Thr Ala Pro Ala Leu Arg Ala Gln
 2285 2290 2295
 Ala Glu Arg Leu Arg Pro Ala Ala Thr Ala Leu Ala Thr Gly Thr
 2300 2305 2310
 Val Thr Asn Ser Gly Ala Leu Glu Ala Leu Asp Leu Gly Tyr Ser
 2315 2320 2325
 Leu Ala Thr Ser Arg Ala Ala Leu Glu His Arg Ala Val Leu Ile
 2330 2335 2340
 Gly Thr Pro Ser Asp Gly Gln Ala Leu Ala Ser Arg Leu Asp Ala
 2345 2350 2355
 Leu Ala Ala Gly Glu Gln Val Pro Gly Leu Val Gln Gly Thr Ala
 2360 2365 2370
 Ser Gly Gly Gly Leu Ala Phe Leu Phe Thr Gly Gln Gly Ser Gln
 2375 2380 2385
 Arg Leu Gly Met Gly Arg Glu Leu Tyr Glu Thr Tyr Pro Val Phe
 2390 2395 2400
 Ala Glu Ala Leu Asp Ala Val Cys Ala Arg Leu Glu Leu Pro Leu
 2405 2410 2415
 Lys Glu Val Leu Phe Gly Ala Asp Gly Ala Ala Leu Asp Gln Thr
 2420 2425 2430
 Ala Val Thr Gln Pro Ala Leu Phe Ala Ile Glu Val Ala Leu Phe
 2435 2440 2445
 Arg Leu Val Glu Ser Trp Gly Leu Arg Pro Asp Phe Val Ala Gly
 2450 2455 2460

His Ser Ile Gly Glu Ile Ala Ala Ala His Val Ala Gly Val Phe
 2465 2470 2475
 Ser Leu Glu Asp Ala Cys Arg Leu Val Glu Ala Arg Gly Arg Leu
 2480 2485 2490
 Met Gln Ala Leu Pro Gly Gly Gly Val Met Ile Ala Val Gln Ala
 2495 2500 2505
 Ser Glu Asp Glu Val Leu Pro Leu Leu Thr Asp Arg Val Ser Ile
 2510 2515 2520
 Ala Ala Ile Asn Gly Pro Gln Ser Val Val Ile Ala Gly Asp Glu
 2525 2530 2535
 Ala Asp Ala Val Ala Ile Ala Glu Ser Phe Thr Gly Arg Lys Ser
 2540 2545 2550
 Lys His Leu Ala Val Ser His Ala Phe His Ser Pro His Met Asp
 2555 2560 2565
 Gly Met Leu Glu Asp Phe Arg Ala Val Ala Glu Gly Leu Ser Tyr
 2570 2575 2580
 Glu Ala Pro Arg Ile Ala Val Val Ser Asn Leu Thr Gly Ala Leu
 2585 2590 2595
 Val Ser Asp Glu Met Ser Ser Ala Glu Phe Trp Val Arg His Val
 2600 2605 2610
 Arg Glu Ala Val Arg Phe Leu Asp Gly Ile Arg Ala Leu Glu Ala
 2615 2620 2625
 Ala Gly Val Thr Thr Tyr Val Glu Leu Gly Pro Gly Gly Val Leu
 2630 2635 2640
 Ser Ala Leu Ala Gln Glu Cys Val Ser Gly Asp Gly Ala Ala Phe
 2645 2650 2655
 Val Pro Val Leu Arg Ser Gly Arg Ser Glu Ala Glu Thr Val Val
 2660 2665 2670
 Thr Ala Leu Ala Gln Ala His Val Arg Gly Val Glu Val Asp Trp
 2675 2680 2685
 Ala Ala Phe Phe Ala Gly Thr Gly Ala Glu Arg Ile Asp Leu Pro
 2690 2695 2700
 Thr Tyr Ala Phe Gln Arg Gln Arg Tyr Trp Pro Glu Thr Val Leu
 2705 2710 2715
 Ser Thr Val Gly Pro Val Val Ala Glu Ala Val Asp Ala Val Asp
 2720 2725 2730
 Ala Arg Phe Trp Asp Ala Val Glu Arg Glu Asp Leu Ala Ser Leu
 2735 2740 2745
 Val Ala Glu Leu Asp Val Asp Glu Thr Pro Leu Gly Glu Val Val
 2750 2755 2760

Pro Ala Leu Ser Ala Trp Arg Arg Glu Arg Arg Ala Gln Ser Glu
 2765 2770 2775
 Val Asp Gly Trp Arg Tyr Arg Val Ser Trp Lys Pro Leu Ala Asp
 2780 2785 2790
 Ala Ser Thr Ala Arg Leu Ser Gly Ser Trp Val Val Val Ser Pro
 2795 2800 2805
 Asp Lys Gly Val Asp Asp Ser Ala Val Val Ala Gly Leu Ala Gly
 2810 2815 2820
 Arg Gly Ala Glu Val Arg Arg Val Val Val Glu Ala Gly Val Asp
 2825 2830 2835
 Arg Ser Ala Leu Ala Gly Leu Leu Ala Asp Ala Gly Ser Ala Ala
 2840 2845 2850
 Gly Val Val Ser Leu Leu Gly Leu Asp Glu Ser Glu Gly Leu Leu
 2855 2860 2865
 Gly Thr Val Gly Leu Val Gln Ala Leu Gly Asp Ala Gly Val Glu
 2870 2875 2880
 Ala Pro Leu Trp Cys Leu Thr Arg Gly Ala Val Ser Val Gly Arg
 2885 2890 2895
 Ser Asp Arg Leu Val Ser Pro Val Gln Ala Gln Val Trp Gly Leu
 2900 2905 2910
 Gly Arg Val Ala Ala Leu Glu Val Pro Glu His Trp Gly Gly Leu
 2915 2920 2925
 Val Asp Leu Pro Glu Val Leu Asp Glu Arg Ala Val Ala Arg Leu
 2930 2935 2940
 Val Gly Val Leu Ala Gly Ser Gly Glu Asp Gln Val Ala Val Arg
 2945 2950 2955
 Ser Ser Gly Val Phe Gly Arg Arg Leu Val Arg Ala Pro Arg Ala
 2960 2965 2970
 Glu Gly Ala Ala Ala Trp Thr Pro Thr Gly Thr Val Leu Val Thr
 2975 2980 2985
 Gly Gly Thr Gly Val Leu Gly Gly Arg Val Ala Arg Trp Leu Ala
 2990 2995 3000
 Gly Ala Gly Ala Glu Arg Leu Val Leu Thr Ser Arg Arg Gly Pro
 3005 3010 3015
 Asp Ala Pro Gly Ala Ala Glu Leu Val Glu Glu Leu Thr Thr Gly
 3020 3025 3030
 Phe Gly Val Glu Val Ser Ile Val Ala Cys Asp Ala Ala Asp Arg
 3035 3040 3045
 Asp Ala Leu Arg Ala Leu Leu Ser Ala Glu Ala Gly Thr Leu Thr
 3050 3055 3060

Ala Val Ile His Thr Ala Gly Val Leu Asp Asp Gly Val Leu Asp
3065 3070 3075

Ala Leu Thr Pro Asp Arg Ile Asp Ser Val Leu Arg Ala Lys Ala
3080 3085 3090

Val Ser Ala Leu Asn Leu His Glu Leu Thr Ala Glu Leu Asp Ile
3095 3100 3105

Glu Leu Ser Ala Phe Val Leu Phe Ser Ser Met Ser Gly Thr Val
3110 3115 3120

Gly Ala Ala Gly Gln Ala Asn Tyr Ala Ala Ala Asn Ala Phe Leu
3125 3130 3135

Asp Ala Leu Ala Glu Gln Arg Arg Ala Asp Gly Leu Ala Ala Thr
3140 3145 3150

Ser Leu Ala Trp Gly Pro Trp Ala Glu Gly Gly Met Ala Ala Asp
3155 3160 3165

Ala Ala Leu Glu Ala Arg Met Arg Arg Gly Gly Val Pro Pro Met
3170 3175 3180

Asp Ala Glu Leu Ala Leu Ser Ala Leu Arg Gln Ala Ile Gly Ser
3185 3190 3195

Ala Asp Ala Ala Leu Thr Ile Val Asp Phe Asp Trp Ala Arg Phe
3200 3205 3210

Ala Pro Gly Phe Thr Ala Val Arg Ala Gly Asn Leu Leu Ala Glu
3215 3220 3225

Leu Pro Glu Ala Ala Ala Val Met Arg Gly Pro Glu Asn Ala Asp
3230 3235 3240

Ser Arg Pro Glu His Ala Asp Ser Ser Leu Ala Leu Arg Leu Gln
3245 3250 3255

Gly Met Ala Gln Ala Asp Gln Glu Pro Phe Leu Leu Glu Leu Val
3260 3265 3270

Arg Ala Gln Val Ala Glu Val Leu Gly His Ser Gly Ala Glu Asp
3275 3280 3285

Ile Glu Ala Gly Arg Ala Phe Arg Glu Ile Gly Phe Asp Ser Leu
3290 3295 3300

Thr Ala Val Glu Leu Arg Asn Arg Leu Gly Ala Ala Ala Glu Leu
3305 3310 3315

Arg Leu Pro Ala Thr Leu Val Tyr Asp Tyr Pro Thr Pro Ala Ala
3320 3325 3330

Leu Ala Val His Leu Arg Thr Glu Leu Leu Gly Lys Gln Val Val
3335 3340 3345

Val Ser Gly Pro Val Ser Lys Val Val Asp Asp Asp Pro Ile Ala
3350 3355 3360

Ile Val Ser Met Ser Cys Arg Phe Pro Gly Gly Val Arg Thr Pro
 3365 3370 3375
 Glu Asp Leu Trp Glu Leu Leu Ser Thr Gly Gly Asp Ala Ile Ser
 3380 3385 3390
 Asp Leu Pro Leu Asp Arg Gly Trp Asp Ile Asp Ala Leu Tyr Asp
 3395 3400 3405
 Ala Asp Pro Ser Thr Gln Gly Thr Ser Tyr Ala Arg Ala Gly Gly
 3410 3415 3420
 Phe Leu Tyr Asp Ala Ala Asp Phe Asp Ala Asp Phe Phe Gly Ile
 3425 3430 3435
 Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Leu Leu
 3440 3445 3450
 Leu Glu Thr Ser Trp Glu Ala Phe Glu Arg Ala Gly Ile Asp Pro
 3455 3460 3465
 Glu Thr Leu Arg Gly Ser Gln Ala Gly Val Phe Val Gly Thr Asn
 3470 3475 3480
 Gly Gln Asp Tyr Leu Ser Val Leu Leu Glu Glu Pro Glu Gly Leu
 3485 3490 3495
 Glu Gly His Leu Gly Thr Gly Asn Ala Ala Ser Val Val Ser Gly
 3500 3505 3510
 Arg Leu Ser Tyr Val Phe Gly Leu Glu Gly Pro Ala Val Thr Val
 3515 3520 3525
 Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Trp Ala Ile
 3530 3535 3540
 Gln Ala Leu Arg Asn Gly Glu Cys Ser Leu Ala Leu Ala Gly Gly
 3545 3550 3555
 Val Thr Val Met Ser Thr Pro Gly Thr Phe Ile Glu Phe Ser Arg
 3560 3565 3570
 Gln Arg Gly Leu Ala Glu Asp Gly Arg Ile Lys Ala Phe Ala Ala
 3575 3580 3585
 Ala Ala Asp Gly Thr Gly Trp Gly Glu Gly Val Gly Met Leu Leu
 3590 3595 3600
 Val Glu Arg Leu Ser Asp Ala Glu Arg Asn Gly His Pro Val Leu
 3605 3610 3615
 Ala Ile Val Arg Gly Ser Ala Ile Asn Gln Asp Gly Ala Ser Asn
 3620 3625 3630
 Gly Leu Thr Ala Pro Asn Gly Pro Ser Gln Gln Arg Val Ile Arg
 3635 3640 3645
 Ala Ala Leu Ala Ser Ala Gly Leu Ser Ala Ala Asp Val Asp Ala
 3650 3655 3660

Val Glu Ala His Gly Thr Gly Thr Thr Leu Gly Asp Pro Ile Glu
 3665 3670 3675
 Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Asp Arg Pro Ala Asp
 3680 3685 3690
 Arg Pro Leu Gln Leu Gly Ser Ile Lys Ser Asn Ile Gly His Thr
 3695 3700 3705
 Gln Ala Ala Ala Gly Val Ala Gly Val Ile Lys Met Val Leu Ala
 3710 3715 3720
 Met Glu His Gly Val Leu Pro Gln Ser Leu His Ile Asp Ala Pro
 3725 3730 3735
 Ser Pro Gln Val Asp Trp Glu Ala Gly Asp Ile Ala Leu Leu Thr
 3740 3745 3750
 Glu Gln Arg Gln Trp Pro Glu Thr Gly Arg Pro Arg Arg Ala Gly
 3755 3760 3765
 Val Ser Ser Phe Gly Phe Ser Gly Thr Asn Ala His Thr Ile Ile
 3770 3775 3780
 Glu Gln Ala Pro Ala Ser Thr Glu Thr Asp Arg Ala Glu Ser Gly
 3785 3790 3795
 Ser Val Glu Pro Asp Phe Val Pro Leu Met Leu Ser Ala Lys Ser
 3800 3805 3810
 Asp Val Ala Leu Arg Ala Gln Ala Ala Ser Leu Arg Ala Arg Leu
 3815 3820 3825
 Ile Ala Ala Pro Asp Met Arg Leu Ser Asp Val Gly Ser Thr Leu
 3830 3835 3840
 Thr Thr Gly Arg Ser Ala Phe Glu Arg Arg Ala Ala Leu Val Ala
 3845 3850 3855
 Gly Gly Arg Glu Gly Leu Leu Ala Gly Leu Glu Ala Leu Ala Asp
 3860 3865 3870
 Gly Gly Ser Ala Ala Gly Leu Val Glu Gly Ser Pro Val Ser Gly
 3875 3880 3885
 Lys Leu Ala Phe Leu Phe Thr Gly Gln Gly Ser Gln Arg Leu Gly
 3890 3895 3900
 Met Gly Arg Glu Leu Tyr Glu Ala Tyr Pro Val Phe Ala Asp Ala
 3905 3910 3915
 Leu Asp Ala Val Cys Val Arg Leu Glu Leu Pro Leu Met Asp Val
 3920 3925 3930
 Leu Phe Gly Ala Asp Ala Gly Leu Leu Asn Glu Thr Ala Tyr Thr
 3935 3940 3945
 Gln Pro Ala Leu Phe Ala Val Glu Val Ala Leu Phe Arg Leu Val
 3950 3955 3960

Glu Ser Trp Gly Leu Arg Pro Asp Phe Leu Ala Gly His Ser Ile
 3965 3970 3975
 Gly Glu Ile Ala Ala Ala His Val Ala Gly Val Leu Ser Leu Asp
 3980 3985 3990
 Asp Ala Cys Ala Leu Val Glu Ala Arg Gly Arg Leu Met Gly Ala
 3995 4000 4005
 Leu Pro Ala Gly Gly Val Met Ile Ala Val Gln Ala Ser Glu Asp
 4010 4015 4020
 Glu Val Leu Pro Leu Leu Thr Asp Arg Val Ser Ile Ala Ala Ile
 4025 4030 4035
 Asn Gly Pro Gln Ser Val Val Ile Ala Gly Asp Glu Ala Asp Ala
 4040 4045 4050
 Val Ala Ile Val Glu Ser Phe Thr Gly Arg Lys Ser Lys Arg Leu
 4055 4060 4065
 Ser Val Ser His Ala Phe His Ser Pro His Met Asp Gly Met Leu
 4070 4075 4080
 Glu Asp Phe Arg Val Val Ala Glu Gly Leu Ser Tyr Asp Ala Pro
 4085 4090 4095
 Arg Ile Pro Val Val Ser Asn Leu Thr Gly Ala Leu Val Thr Asp
 4100 4105 4110
 Glu Met Gly Ser Ala Asp Phe Trp Val Arg His Val Arg Glu Ala
 4115 4120 4125
 Val Arg Phe Leu Asp Gly Ile Arg Ala Leu Glu Ala Ala Gly Val
 4130 4135 4140
 Thr Thr Tyr Val Glu Leu Gly Pro Asp Gly Val Leu Ser Ala Met
 4145 4150 4155
 Ala Gln Glu Cys Val Thr Glu Gly Gly Ala Ala Phe Val Pro Val
 4160 4165 4170
 Leu Arg Lys Gly Arg Pro Glu Ala Glu Thr Val Met Ala Thr Leu
 4175 4180 4185
 Gly Gln Ala His Val Arg Gly Val Ala Val Asp Trp His Ser Val
 4190 4195 4200
 Tyr Gly Thr Gly Ala Gln Arg Val Asp Leu Pro Thr Tyr Ser Phe
 4205 4210 4215
 Gln Arg Gln Arg Tyr Trp Pro Ala Ala Ser Ser Thr Ala Gly Gly
 4220 4225 4230
 Ser Val Asp Arg Ser Val Asp Ala Val Asp Ala Arg Phe Trp Asp
 4235 4240 4245
 Ala Val Glu Arg Glu Asp Leu Ala Ser Leu Ala Ala Glu Leu Asp
 4250 4255 4260

Leu Asp Asp Asp Ala Pro Phe Ser Glu Leu Ala Pro Ala Leu Ser
 4265 4270 4275
 Ala Trp Arg Arg Glu Arg Arg Ala Leu Ser Glu Val Asp Gly Trp
 4280 4285 4290
 Arg Tyr Arg Val Ser Trp Lys Pro Leu Ala Asp Val Ser Ala Ser
 4295 4300 4305
 Gly Leu Ser Gly Ser Trp Val Val Ile Ser Pro Ala Gly Gly Val
 4310 4315 4320
 Asp Asp Ser Ala Val Val Gly Ala Leu Val Gly Arg Gly Ala Glu
 4325 4330 4335
 Val Arg Arg Val Val Val Glu Ala Gly Val Asp Arg Ser Ala Leu
 4340 4345 4350
 Ala Gly Leu Leu Ala Asp Ala Gly Ser Ala Ala Gly Val Val Ser
 4355 4360 4365
 Leu Leu Gly Leu Asp Glu Ser Glu Gly Leu Leu Gly Thr Val Gly
 4370 4375 4380
 Leu Val Gln Ala Leu Gly Asp Ala Gly Val Glu Ala Pro Leu Trp
 4385 4390 4395
 Cys Leu Thr Arg Gly Ala Val Ser Val Gly Arg Ser Asp Arg Leu
 4400 4405 4410
 Val Ser Pro Val Gln Ala Gln Val Trp Gly Leu Gly Arg Val Ala
 4415 4420 4425
 Ala Leu Glu Val Pro Glu Arg Trp Gly Gly Leu Ile Asp Leu Pro
 4430 4435 4440
 Glu Val Leu Asp Glu Arg Ala Val Ser Arg Leu Val Gly Val Leu
 4445 4450 4455
 Ser Gly Gly Gly Ser Gly Glu Asp Gln Val Ala Val Arg Ser Ser
 4460 4465 4470
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 Thr Gly Val Leu Gly Gly Arg Val Ala Arg Trp Leu Ala Gly Ala
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 His Thr Ala Gly Val Leu Asp Asp Gly Val Leu Asp Ala Leu Thr
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 Pro Asp Arg Ile Asp Ser Val Leu Arg Ala Lys Ala Val Ser Ala
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Pro	Ala	Asp	Arg	Pro	Leu	Gln	Leu	Gly	Ser	Ile	Lys	Ser	Asn	Ile
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<212> PRT

<213> Streptomyces aizunensis

<400> 29

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Asp Leu His Gln Thr Arg Gln Arg Leu Arg Asp Val Glu Ala Lys Asn
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Gln Asp Pro Ile Ala Ile Val Gly Met Gly Cys Arg Tyr Pro Gly Gly
35 40 45

Val Thr Ser Pro Glu Glu Leu Trp Gln Leu Val Val Asp Gly Gly Asp
50 55 60

Ala Ile Ser Gly Phe Pro Ala Asp Arg Gly Trp Asp Met Glu Thr Val
65 70 75 80

Tyr His Pro Asp Pro Glu His Pro Gly Thr Ser Tyr Ala Asn Gln Gly
85 90 95

Gly Phe Val Arg Asp Phe Ala Arg Phe Asp Pro Ser Leu Phe Gly Ile
100 105 110

Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Leu Leu Leu
115 120 125

Glu Thr Ser Trp Glu Ala Phe Glu Arg Ala Gly Ile Asp Pro Thr Ser
130 135 140

Met Arg Gly Lys Gln Val Gly Val Phe Val Gly Thr Ser Asn His Asp
145 150 155 160

Tyr Leu Ser Ala Leu Leu Ser Ser Ser Glu Asn Val Glu Gly Tyr Leu
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Gly Thr Gly Asn Ala Ala Ser Val Ala Ser Gly Arg Leu Ser Tyr Thr
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Phe Gly Leu Glu Gly Pro Ala Val Thr Val Asp Thr Ala Cys Ser Ser
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Ser Ser Val Ala Leu His Leu Ala Val Gln Ala Leu Arg Asn Gly Glu
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Cys Ser Leu Ala Leu Ala Gly Gly Ala Thr Leu Met Ser Ala Pro Gly
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Thr Phe Ile Asp Tyr Ser Lys Gln Arg Gly Leu Ala Thr Asp Gly Arg
245 250 255

Cys Lys Ala Phe Ser Pro Asp Ala Asp Gly Phe Ser Leu Ala Glu Gly
260 265 270

Val Gly Ile Leu Leu Val Glu Arg Leu Ser Asp Ala Arg Arg Lys Gly
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His Pro Val Leu Ala Val Val Arg Gly Thr Ala Val Asn Gln Asp Gly
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Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ser Gln Gln Arg Val
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Ile Leu Gln Ala Leu Ser Asn Ala Arg Leu Thr Pro Asp Gln Val Asp
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Ala Val Glu Ala His Gly Thr Gly Thr Gly Leu Gly Asp Pro Ile Glu
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Ala Gln Ala Leu Ile Ala Thr Tyr Gly Gln Asp Arg Pro Asp Gly Arg
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Ala Ala Gly Val Ala Gly Val Ile Lys Ser Val Met Ala Met Arg His
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Gly Val Leu Pro Arg Thr Leu His Val Asp Glu Pro Thr Pro Glu Val
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Asp Trp Ser Ala Gly Asp Val Ser Leu Leu Thr Glu Ala Arg Pro Trp
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Pro Leu Gly Asp Gln Pro Arg Arg Ile Gly Val Ser Ser Phe Gly Met
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Ser Gly Thr Asn Ala His Ile Ile Leu Glu Ser Ala Gln Glu Tyr Ala
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Asp Gly Arg Gln Ala Asp Ala Gly Thr Ala Gly Asn Glu Pro Ala Thr
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Gly Arg Thr Asn Pro Pro Gly Ala Leu Pro Val Val Leu Ser Gly Arg
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Thr Glu Pro Ala Leu Arg Ala Gln Ala Ala Ala Leu His Ala His Leu
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Arg Asp Ala Leu Leu Ala Gly Leu Ala Ala Leu Ala Glu Gly Arg Pro
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Ser Ala Asp Val Val Glu Gly Ser Ala Thr Asp Gly Lys Leu Ala Phe
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Tyr Ala Thr Tyr Pro Val Phe Ala Gln Ala Leu Asp Ala Val Cys Glu
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 Val Ala Gly Val Phe Ser Leu Glu Asp Ala Cys Thr Leu Val Glu Ala
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 Arg Gly Arg Leu Met Gln Ala Leu Pro Thr Gly Gly Val Met Ile Ala
 690 695 700
 Val Glu Ala Ser Glu Asp Glu Val Leu Pro Leu Leu Thr Asp Trp Val
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 725 730 735
 Glu Asp Ala Ala Val Ala Ile Ala Glu Ala Phe Ala Ala Gln Gly Arg
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 Asp Gly Met Leu Asp Ala Phe Arg Thr Val Ala Gln Gly Leu Ser Tyr
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 930 935 940
 Val Asp Ser Glu Asp Leu Ala Ala Leu Ala Asp Thr Leu Gly Val Gly
 945 950 955 960
 Gly Asp Glu Pro Leu Ser Ser Val Leu Pro Ala Leu Ser Ala Trp His
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 Glu Asp His Leu Ala Val Arg Ser Thr Gly Val Phe Val Arg Arg
 1190 1195 1200
 Leu Ala Arg Ala Thr Arg Asp Glu Arg Pro Thr Thr Glu Trp Ala
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Thr	Thr	Gly	Thr	Ala	Leu	Ile	Thr	Gly	Gly	Thr	Gly	Ala	Leu	Gly
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Leu	Leu	Val	Ser	Arg	Arg	Gly	Pro	Glu	Ala	Glu	Gly	Ala	Asp	Ala
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Leu	Ala	Ala	Glu	Leu	Arg	Ala	Leu	Gly	Ala	Glu	Val	Thr	Ile	Ala
	1265					1270					1275			
Ala	Cys	Asp	Val	Ala	Asp	Arg	Asp	Ala	Val	Ala	Ala	Leu	Leu	Ala
	1280					1285					1290			
Thr	Leu	Pro	Ala	Glu	His	Pro	Leu	Thr	Asn	Val	Val	His	Ala	Ala
	1295					1300					1305			
Gly	Val	Leu	Asp	Asp	Gly	Val	Leu	Asp	Ala	Gln	Thr	Pro	Gln	Arg
	1310					1315					1320			
Leu	Ala	Gly	Val	Leu	Arg	Pro	Lys	Ala	His	Ala	Ala	Gln	Val	Leu
	1325					1330					1335			
His	Glu	Leu	Thr	Arg	Asp	Leu	Asp	Leu	Ser	Ala	Phe	Val	Leu	Phe
	1340					1345					1350			
Ser	Ser	Val	Ala	Ala	Val	Phe	Gly	Ala	Ala	Gly	Gln	Ala	Asn	Tyr
	1355					1360					1365			
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	1370					1375					1380			
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	1385					1390					1395			
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	1400					1405					1410			
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	1430					1435					1440			
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	1505					1510					1515			

Ala	Glu	Asp	Gly	Arg	Ile	Lys	Ala	Phe	Ala	Ala	Ala	Ala	Asp	Gly
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Thr	Gly	Trp	Gly	Glu	Gly	Val	Gly	Ile	Leu	Leu	Val	Glu	Arg	Leu
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Ser	Asp	Ala	Gln	Arg	Asn	Gly	His	Pro	Val	Leu	Ala	Ile	Val	Arg
1850						1855					1860			
Gly	Ser	Ala	Ile	Asn	Gln	Asp	Gly	Ala	Ser	Asn	Gly	Leu	Thr	Ala
1865						1870					1875			
Pro	Asn	Gly	Pro	Ser	Gln	Gln	Arg	Val	Ile	Arg	Gln	Ala	Leu	Ala
1880						1885					1890			
Ser	Gly	Gly	Leu	Thr	Thr	Met	Asp	Val	Asp	Ala	Val	Glu	Ala	His
1895						1900					1905			
Gly	Thr	Gly	Thr	Lys	Leu	Gly	Asp	Pro	Ile	Glu	Ala	Gln	Ala	Leu
1910						1915					1920			
Leu	Ala	Thr	Tyr	Gly	Gln	Asp	Arg	Pro	Glu	Gly	Arg	Pro	Leu	Leu
1925						1930					1935			
Leu	Gly	Ser	Ile	Lys	Ser	Asn	Leu	Gly	His	Thr	Gln	Ala	Ala	Ala
1940						1945					1950			
Gly	Val	Ala	Gly	Val	Met	Lys	Met	Val	Leu	Ala	Met	Gln	His	Gly
1955						1960					1965			
Val	Leu	Pro	Gln	Thr	Leu	His	Val	Asp	Glu	Pro	Thr	Pro	His	Val
1970						1975					1980			
Asp	Trp	Ser	Ala	Gly	Asp	Val	Ala	Leu	Leu	Ala	Asp	Ala	Val	Ala
1985						1990					1995			
Trp	Pro	Glu	Thr	Gly	Arg	Pro	Arg	Arg	Ala	Gly	Val	Ser	Ser	Phe
2000						2005					2010			
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2015						2020					2025			
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2045						2050					2055			
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2060						2065					2070			
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2075						2080					2085			
Gly	Arg	Ser	Ala	Phe	Glu	Arg	Arg	Ala	Ala	Val	Ile	Ala	Ala	Asp
2090						2095					2100			
Arg	Asp	Gly	Leu	Leu	Ala	Gly	Leu	Ala	Ala	Leu	Ala	Asp	Gly	Gly
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Arg Glu Leu Tyr Asp Thr Tyr Pro Val Phe Ala Asp Ala Leu Asp
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Ala Val Cys Ala His Val Asp Ala His Leu Glu Val Pro Leu Lys
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Asp Val Leu Phe Gly Ala Asp Thr Gly Leu Leu Asp Gln Thr Ala
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Tyr Thr Gln Pro Ala Leu Phe Ala Val Glu Val Ala Leu Phe Arg
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Leu Val Glu Ser Trp Gly Leu Arg Pro Asp Phe Leu Ala Gly His
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Ser Ile Gly Glu Ile Ala Ala Ala His Val Ala Gly Val Phe Ser
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Leu Gln Asp Ala Ser Glu Leu Val Val Ala Arg Gly Arg Leu Met
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Gln Ala Leu Pro Thr Gly Gly Val Met Ile Ala Val Gln Ala Ser
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Glu Asp Glu Val Leu Pro Leu Leu Thr Asp Arg Val Ser Ile Ala
2270 2275 2280

Ala Ile Asn Gly Pro Gln Ser Val Val Ile Ala Gly Asp Glu Ala
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Asp Ala Val Ala Ile Ala Glu Ser Phe Thr Gly Arg Lys Ser Lys
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Arg Leu Thr Val Ser His Ala Phe His Ser Pro His Met Asp Gly
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Met Leu Glu Asp Phe Arg Ala Val Ala Glu Gly Leu Ser Tyr Glu
2330 2335 2340

Ala Pro Arg Ile Pro Val Val Ser Asn Leu Thr Gly Ala Leu Ile
2345 2350 2355

Ser Asp Glu Met Gly Ser Ala Glu Phe Trp Val Arg His Val Arg
2360 2365 2370

Glu Ala Val Arg Phe Leu Asp Gly Ile Arg Thr Leu Glu Ala Ala
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Gly Val Thr Lys Tyr Val Glu Leu Gly Pro Asp Gly Val Leu Ser
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Pro Val Leu Arg Lys Ala Arg Pro Glu Pro Glu Ser Val Thr Thr
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 Ala Leu Thr Thr Ala His Val His Gly Ile Pro Val Asp Trp Gln
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 Tyr Ala Phe Gln Arg Gln Arg Tyr Trp Pro Ala Val Ser Ser Leu
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 Tyr Leu Gly Asp Val Glu Ala Ile Gly Leu Asp Asp Thr Ala His
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 Pro Leu Leu Ser Ala Gly Val Ala Leu Pro Glu Ser Asp Gly Met
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 Asp His Ala Ile Leu Gly Ser Val Leu Leu Pro Gly Thr Ala Phe
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 Val Glu Leu Ala Thr Arg Ala Gly Asp Gln Val Gly Cys Asp Tyr
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 Gly Gly Val Gln Leu Arg Val Trp Val Gly Ala Ala Asp Glu Ser
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 Val Glu Glu Pro Trp Thr Arg His Ala Gly Gly Val Leu Ala Glu
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 Gly Gly Arg Pro Pro Ala Asp Phe Asp Leu Thr Ala Trp Pro Pro
 2615 2620 2625
 Pro Gly Ala Val Glu Val Asp Leu Asp Gly Arg Tyr Asp Gln Leu
 2630 2635 2640
 Asp Gly Ile Gly Phe Ala Tyr Gly Pro Thr Phe Arg Gly Leu Arg
 2645 2650 2655
 Thr Ala Trp Gln Leu Asp Gly Glu Ile Tyr Ala Glu Val Arg Leu
 2660 2665 2670
 Pro Glu Gly Ala Glu Gly Glu Ala Gly Arg Phe Gly Leu His Pro
 2675 2680 2685
 Ala Leu Leu Asp Ala Ala Leu His Ala Ile Gly Leu Gly Gly Leu
 2690 2695 2700
 Gly Ala Asp Asp Gly Gln Gly Arg Leu Pro Phe Ala Trp Ser Gly
 2705 2710 2715

Val	Ser	Leu	His	Ala	Gly	Gly	Ala	Ala	Ala	Leu	Arg	Val	His	Leu
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Ala	Pro	Ala	Gly	Ala	Glu	Gly	Val	Arg	Leu	Glu	Ile	Ala	Asp	Ala
2735						2740					2745			
Ser	Gly	Ala	Pro	Val	Ala	Ala	Val	Glu	Ser	Leu	Gly	Leu	Arg	Pro
2750						2755					2760			
Val	Thr	Ala	Glu	Gln	Leu	Arg	Ala	Ala	Arg	Ala	Thr	Tyr	His	Glu
2765						2770					2775			
Ser	Val	Phe	Arg	Gln	Gln	Trp	Thr	Glu	Leu	Pro	Gly	Leu	Gly	Ala
2780						2785					2790			
Pro	Ala	Ala	Thr	Pro	Ala	Val	Arg	Tyr	Ala	Phe	Leu	Gly	Gly	Asp
2795						2800					2805			
Ser	Gly	Asp	Ser	Gly	Asp	Ser	Gly	Asp	Thr	Ala	Ala	Ala	Asp	Arg
2810						2815					2820			
His	Gln	Asp	Leu	Ala	Ala	Leu	Ala	Ala	Ala	Ile	Asp	Ala	Gly	Arg
2825						2830					2835			
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2840						2845					2850			
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2855						2860					2865			
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2870						2875					2880			
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2885						2890					2895			
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2900						2905					2910			
Arg	Ser	Ala	Gln	Thr	Glu	Asn	Pro	Gly	Arg	Ile	Ala	Leu	Val	Asp
2915						2920					2925			
Thr	Asp	Gly	His	Asp	Arg	Ser	Glu	Gln	Ala	Leu	Arg	Ala	Ala	Leu
2930						2935					2940			
Thr	Ser	Asp	Glu	Glu	Arg	Phe	Ala	Leu	Arg	Ala	Gly	Ala	Val	Leu
2945						2950					2955			
Val	Pro	Arg	Leu	Ala	Arg	Val	Glu	Ile	Gln	Gln	Asp	Asp	Ser	Ala
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Ala	Thr	Gly	Ala	Leu	Gly	Gly	Leu	Phe	Ala	Arg	His	Leu	Ala	Ala
2990						2995					3000			
Glu	His	Gly	Val	Glu	Arg	Leu	Leu	Leu	Val	Gly	Arg	Arg	Gly	Ala
3005						3010					3015			

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 Gly Thr Leu Ala Thr Trp Ala Ala Cys Asp Val Ala Asp Arg Asp
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 3050 3055 3060
 Thr Ala Val Val His Thr Ala Gly Val Leu Asp Asp Gly Val Ile
 3065 3070 3075
 Ser Ser Leu Thr Pro Glu Arg Leu Ser Ala Val Leu Arg Pro Lys
 3080 3085 3090
 Val Asp Ala Ala Trp Asn Leu His Glu Leu Thr Arg Gly Leu Asp
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 Thr Val Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Leu
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 Gly Gly Val Thr Val Met Phe Thr Pro Gly Thr Phe Ile Glu Phe
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 Ser Arg Gln Arg Gly Leu Ala Ala Asp Gly Arg Cys Lys Ser Phe
 3575 3580 3585
 Ala Ala Ala Ala Asp Gly Thr Gly Trp Gly Glu Gly Ala Gly Met
 3590 3595 3600
 Leu Leu Leu Glu Arg Leu Ser Asp Ala Arg Arg Asn Gly His Gln
 3605 3610 3615

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 Asp Gly Ile Arg Ala Leu Glu Ala Ala Gly Val Thr Thr His Ile
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 Glu Leu Gly Pro Asp Gly Val Leu Cys Ala Met Ala Gln Glu Cys
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 Ile Pro Ser Gly Glu Arg Trp Ala Val Leu Gly Glu Asp Glu Pro
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 900 905 910

Trp Leu Asp Ala Gly Arg Pro Leu Gly Asp Val Ser Ser Ala Gly Leu
 915 920 925

Gly Ala Ala Gly His Pro Leu Leu Gly Ala Ala Val Ala Leu Ala Asp
 930 935 940

Leu Asp Gly Phe Leu Tyr Thr Gly Arg Leu Ser Leu Asp Thr His Pro
 945 950 955 960

Trp Leu Ala Asp His Ala Val Met Gly Ser Ala Val Leu Pro Gly Thr
 965 970 975

Ala Phe Val Glu Leu Ala Ile Arg Ala Gly Asp Gln Val Gly Cys Asp
 980 985 990

Leu Leu Glu Glu Leu Thr Leu His Ala Pro Leu Val Leu Pro Pro Ala
 995 1000 1005

Gly Gly Val Gln Val Gln Leu Trp Val Gly Ala Pro Asp Ala Thr
 1010 1015 1020

Gly Arg Arg Thr Leu Gly Val His Ser Arg Pro Glu Pro Ala Pro
 1025 1030 1035

Asp Ala Val Gly Pro Asp Ala Asp Ala Ala Glu Pro Trp Thr Arg
 1040 1045 1050

His Ala Asp Gly Val Leu Ala Thr Gly Ala Pro Gln Pro Ser Phe
 1055 1060 1065

Ala Pro Asp Val Trp Pro Pro Ala Gly Ala Arg Pro Leu Pro Val
 1070 1075 1080

Asp Glu Leu Tyr Ala Gly Leu Ala Glu Ala Gly Leu Glu Tyr Gly
 1085 1090 1095

Pro Ala Phe Gln Gly Val Arg Ala Ala Trp Ala Ser Asp Asp Ala
 1100 1105 1110

Ala Tyr Val Glu Ile Ala Ala Ala Asp Gly Gln Trp Ala Asp Ala
 1115 1120 1125

Pro Leu Phe Gly Leu His Pro Ala Leu Leu Asp Ser Ala Leu His
 1130 1135 1140

Ala Ile Gly Leu Ala Gly Leu Val Glu Asp Thr Gly Arg Gly Arg
 1145 1150 1155

Leu Pro Phe Ser Trp Ser Gly Val Ser Leu Tyr Ala Val Gly Ala
 1160 1165 1170

Ser Val Leu Arg Val Arg Leu Ala Lys Ala Gly Pro Asp Ala Val
 1175 1180 1185

Ser Leu Ala Leu Ala Asp Gly Ala Gly Gln Pro Val Gly Asp Ile
 1190 1195 1200
 Ala Ser Leu Thr Leu Arg Pro Val Ser Ala Glu Gln Leu Asp Thr
 1205 1210 1215
 Gly Arg Gly Gly His His Asp Ala Leu Phe Gln Val Asp Trp Thr
 1220 1225 1230
 Pro Leu Asn Leu Pro Arg Ala Val Asp Ser Arg Trp Ala Val Leu
 1235 1240 1245
 Gly Glu Pro Val Pro Thr Asp Glu Pro Gly Asp Gly Val Ala Arg
 1250 1255 1260
 His Ala Asp Ala Glu Ala Leu Ser Ala Ala Leu Asp Ala Gly Ala
 1265 1270 1275
 Pro Val Pro Asp Ala Val Leu Val Arg His Pro Ala Leu Pro Glu
 1280 1285 1290
 Pro Thr Pro Glu Ala Val His Gln Ala Ala His Arg Thr Leu Gly
 1295 1300 1305
 Leu Leu Arg His Trp Leu Gly Asp Asp Arg Leu Ala Asp Ser Arg
 1310 1315 1320
 Leu Val Leu Leu Thr His Gly Ala Val Ala Ala Gly Asp Ala Asp
 1325 1330 1335
 Gln Val Pro Asp Pro Val His Ala Val Val Trp Gly Leu Val Arg
 1340 1345 1350
 Ser Ala Gln Ser Glu His Pro Gly Arg Phe Leu Leu Ile Asp Ser
 1355 1360 1365
 Asp Ser Gly Ile Asp Thr Leu Ser Trp Pro Thr Phe Gly Ala Val
 1370 1375 1380
 Leu Ala Ser Glu Glu Pro Gln Val Ala Leu Arg Gly Gly Val Ala
 1385 1390 1395
 His Ala Pro Arg Leu Ala Lys Val Pro Ala Thr Ala Thr Ala Ala
 1400 1405 1410
 Ala Val Val Glu Thr Ser Ser Tyr Asp Pro Asp Gly Thr Val Leu
 1415 1420 1425
 Val Thr Gly Ala Ser Gly Thr Leu Gly Gly Leu Val Ala Arg His
 1430 1435 1440
 Leu Val Thr Gly Arg Gly Val Arg Arg Leu Leu Leu Leu Ser Arg
 1445 1450 1455
 Arg Gly Ala Asp Ala Pro Gly Ala Gly Glu Leu Ala Ala Glu Leu
 1460 1465 1470
 Thr Gly Leu Gly Ala Glu Val Ser Trp Ala Ala Cys Asp Ala Gly
 1475 1480 1485

Asp	Arg	Asp	Ala	Leu	Ala	Ala	Val	Leu	Ala	Ala	Val	Pro	Ala	Ala	
1490						1495					1500				
His	Pro	Leu	Thr	Ala	Val	Val	His	Thr	Ala	Gly	Val	Leu	Asp	Asp	
1505						1510					1515				
Gly	Val	Ile	Gly	Ser	Leu	Thr	Pro	Glu	Arg	Leu	Asp	Thr	Val	Leu	
1520						1525					1530				
Arg	Pro	Lys	Ala	Asp	Ala	Ala	Leu	His	Leu	His	Glu	Leu	Thr	Arg	
1535						1540					1545				
Asp	Leu	Pro	Leu	Thr	Ala	Phe	Val	Leu	Phe	Ser	Ser	Ala	Ala	Gly	
1550						1555					1560				
Val	Phe	Gly	Ala	Pro	Gly	Gln	Gly	Asn	Tyr	Ala	Ala	Ala	Asn	Ser	
1565						1570					1575				
Phe	Leu	Asp	Ala	Leu	Ala	Gln	Tyr	Arg	Arg	Ala	His	Gly	Leu	Pro	
1580						1585					1590				
Gly	Arg	Ser	Leu	Ala	Trp	Gly	Leu	Trp	Glu	Asp	Ala	Glu	Gly	Met	
1595						1600					1605				
Ala	Gly	Ala	Leu	Asp	Arg	Ala	Asp	Leu	Asp	Arg	Met	Lys	Arg	Gly	
1610						1615					1620				
Gly	Val	His	Gly	Leu	Thr	Ala	Ser	Glu	Gly	Leu	Ala	Leu	Leu	Asp	
1625						1630					1635				
Leu	Ala	Asp	Ala	Leu	Gly	Ala	Asp	Arg	Asp	Asp	Gln	Gly	Gln	Asp	
1640						1645					1650				
Gln	Glu	Thr	Ala	Gly	Arg	Ala	Leu	Leu	Val	Pro	Met	Arg	Leu	Thr	
1655						1660					1665				
Leu	Pro	Ala	Val	Ala	Pro	Gly	Ala	Glu	Val	Ala	Pro	Leu	Phe	Arg	
1670						1675					1680				
Gly	Leu	Val	Arg	Thr	Pro	Ala	Arg	Arg	Val	Ala	Ala	Gly	Ala	Thr	
1685						1690					1695				
Thr	Gly	Ala	Thr	Thr	Gly	Thr	Gly	Pro	Asp	Leu	Ser	Ala	Leu	Glu	
1700						1705					1710				
Arg	Arg	Leu	Leu	Gly	Leu	Asp	Ala	Pro	Glu	Arg	Glu	Arg	Leu	Leu	
1715						1720					1725				
Leu	Asp	Leu	Val	Arg	Gly	His	Val	Ala	Asp	Val	Leu	Gly	His	Gly	
1730						1735					1740				
Ser	Pro	Asp	Ala	Ile	Asp	Pro	Glu	Gln	Ala	Phe	Ser	Glu	Leu	Gly	
1745						1750					1755				
Phe	Asp	Ser	Leu	Thr	Ala	Val	Glu	Leu	Arg	Asn	Arg	Leu	Gly	Ala	
1760						1765					1770				
Ala	Ile	Gly	Arg	Arg	Leu	Pro	Ala	Thr	Leu	Ile	Phe	Asp	His	Pro	
1775						1780					1785				

Ala Ser Leu Thr Leu Ala Arg His Leu Ser Gly Glu Leu Ala Gly
1790 1795 1800

Ser Gln Ala Ala Leu Ala Pro Ala Gly Pro Ala Pro Thr Val Thr
1805 1810 1815

Asp Asp Asp Pro Ile Ala Ile Val Ala Met Ser Cys Arg Tyr Pro
1820 1825 1830

Gly Gly Val Thr Thr Pro Glu Glu Leu Trp Gln Leu Leu Ala Gly
1835 1840 1845

Gly Gly Asp Ala Ile Ser Gly Phe Pro Ala Asp Arg Gly Trp Asp
1850 1855 1860

Val Glu Ser Leu Tyr Asp Pro Asp Pro Asp His Pro Gly Thr Ser
1865 1870 1875

Tyr Thr Arg His Gly Gly Phe Leu Arg Asp Ala Ala Ala Phe Asp
1880 1885 1890

Pro Thr Phe Phe Gly Ile Ser Pro Arg Glu Ala Val Gly Thr Asp
1895 1900 1905

Pro Gln Gln Arg Leu Leu Leu Glu Thr Thr Trp Glu Ala Phe Glu
1910 1915 1920

Arg Ala Gly Ile Asp Pro Ala Thr Val Arg Gly Ser Arg Thr Gly
1925 1930 1935

Val Phe Ala Gly Val Met Tyr His Asp Tyr Ala Ala Leu Leu Glu
1940 1945 1950

Arg Ser Lys Asp Gly Ala Asp Gly Ser Leu Gly Ser Gly Ser Thr
1955 1960 1965

Gly Ser Ile Ala Ser Gly Arg Val Ser Tyr Thr Phe Gly Leu Glu
1970 1975 1980

Gly Pro Ala Val Thr Ile Asp Thr Ala Cys Ser Ser Ser Leu Val
1985 1990 1995

Ala Leu His Met Ala Ile Gln Ala Leu Arg Thr Gly Glu Cys Asp
2000 2005 2010

Met Ala Leu Ala Gly Gly Val Thr Val Met Ala Thr Pro Gly Thr
2015 2020 2025

Phe Ile Gly Phe Ser Arg Gln Arg Gly Leu Ser Ala Asp Gly Arg
2030 2035 2040

Cys Arg Ala Phe Ser Ala Asp Ala Asp Gly Thr Gly Trp Gly Glu
2045 2050 2055

Gly Val Gly Met Leu Leu Val Glu Arg Leu Ser Asp Ala Arg Arg
2060 2065 2070

Asn Gly His Pro Val Leu Ala Val Val Arg Gly Ser Ala Ile Asn
2075 2080 2085

Gln Asp Gly Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ser
 2090 2095 2100
 Gln Gln Arg Val Ile Arg Ala Ala Leu Ala Ser Ala Gly Leu Ser
 2105 2110 2115
 Ala Ala Glu Val Asp Ala Val Glu Ala His Gly Thr Gly Thr Thr
 2120 2125 2130
 Leu Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly
 2135 2140 2145
 Arg Glu His Thr Glu Asp Ser Pro Leu Trp Leu Gly Ser Ile Lys
 2150 2155 2160
 Ser Asn Met Gly His Thr Gln Ala Ala Ala Gly Val Ala Gly Val
 2165 2170 2175
 Ile Lys Met Val Leu Ala Ile Gln His Gly Val Leu Pro Arg Thr
 2180 2185 2190
 Leu His Ala Asp Arg Pro Ser Pro His Val Asp Trp Ser Gln Gly
 2195 2200 2205
 Ala Val Ser Leu Leu Thr Glu Ser Val Pro Trp Pro Glu Thr Gly
 2210 2215 2220
 Arg Pro Arg Arg Ala Gly Val Ser Ser Phe Gly Ile Ser Gly Thr
 2225 2230 2235
 Asn Ala His Thr Ile Ile Glu Gln Ala Pro Glu Glu Ala Thr Val
 2240 2245 2250
 Ala Pro Ala Asp Ala Val Ala Ala Pro Ser Ala Leu Pro Leu Gln
 2255 2260 2265
 Leu Ala Gly Arg Ser Ala Glu Ala Leu Ser Ala Gln Ala Arg Ala
 2270 2275 2280
 Leu Ser Ala His Leu Thr Ala His Pro Asp Val Pro Leu Ala Asp
 2285 2290 2295
 Leu Ala Tyr Ser Leu Ala Thr Ser Arg Ala Thr Phe Asp His Arg
 2300 2305 2310
 Ala Val Leu Val Ala Thr Glu Gly Thr Thr Ala Ala Thr Ala Val
 2315 2320 2325
 Thr Ala Leu Asp Ala Leu Ala Asp Arg Arg Thr Ala Pro Gly Leu
 2330 2335 2340
 Val Arg Gly Thr Ala Ser Lys Gly Gly Arg Thr Ala Phe Leu Phe
 2345 2350 2355
 Thr Gly Gln Gly Ser Gln Arg Leu Gly Met Gly Arg Glu Leu Tyr
 2360 2365 2370
 Glu Ala His Pro Val Phe Ala Arg Ala Leu Asp Ala Val Cys Asp
 2375 2380 2385

Arg	Leu	Glu	Leu	Pro	Leu	Lys	Asp	Val	Leu	Phe	Gly	Thr	Asp	Ala
	2390					2395					2400			
Gly	Leu	Leu	Asn	Glu	Thr	Val	Tyr	Thr	Gln	Pro	Gly	Leu	Phe	Ala
	2405					2410					2415			
Val	Glu	Val	Ala	Leu	Phe	Arg	Leu	Leu	Glu	Ser	Trp	Gly	Val	Lys
	2420					2425					2430			
Pro	Asp	Phe	Leu	Ala	Gly	His	Ser	Ile	Gly	Glu	Ile	Ala	Ala	Ala
	2435					2440					2445			
His	Val	Ala	Gly	Val	Leu	Ser	Leu	Asp	Asp	Val	Cys	Ala	Leu	Val
	2450					2455					2460			
Glu	Ala	Arg	Gly	Arg	Leu	Met	Gly	Ala	Leu	Pro	Gly	Gly	Gly	Val
	2465					2470					2475			
Met	Ile	Ala	Val	Gln	Ala	Ser	Glu	Ala	Glu	Val	Leu	Pro	Leu	Leu
	2480					2485					2490			
Thr	Asp	Arg	Val	Ser	Ile	Ala	Ala	Ile	Asn	Gly	Pro	Arg	Ser	Val
	2495					2500					2505			
Val	Ile	Ala	Gly	Asp	Glu	Ala	Asp	Ala	Val	Ala	Ile	Val	Glu	Ser
	2510					2515					2520			
Phe	Thr	Asp	Arg	Lys	Ser	Lys	Arg	Leu	Thr	Val	Ser	His	Ala	Phe
	2525					2530					2535			
His	Ser	Pro	His	Met	Asp	Gly	Met	Leu	Asp	Ala	Phe	Arg	Glu	Ile
	2540					2545					2550			
Ala	Glu	Gly	Leu	Ser	Tyr	Glu	Ala	Pro	Arg	Ile	Pro	Val	Val	Ser
	2555					2560					2565			
Asn	Leu	Thr	Gly	Ala	Leu	Val	Ser	Asp	Glu	Met	Gly	Ser	Ala	Asp
	2570					2575					2580			
Phe	Trp	Val	Arg	His	Val	Arg	Glu	Ala	Val	Arg	Phe	Leu	Asp	Gly
	2585					2590					2595			
Ile	His	Ala	Leu	Glu	Ala	Ala	Gly	Val	Thr	Thr	Tyr	Val	Glu	Leu
	2600					2605					2610			
Gly	Pro	Asp	Gly	Val	Leu	Ser	Ala	Met	Ala	Gln	Glu	Cys	Val	Thr
	2615					2620					2625			
Gly	Glu	Asp	Ser	Val	Phe	Val	Pro	Val	Leu	Arg	Ser	Gly	Arg	Pro
	2630					2635					2640			
Glu	Ala	Glu	Ser	Val	Thr	Thr	Ala	Leu	Ala	Gln	Ala	His	Val	Arg
	2645					2650					2655			
Gly	Ile	Ala	Val	Asp	Trp	Gln	Ala	Tyr	Phe	Ala	Gly	Thr	Ser	Ala
	2660					2665					2670			
Gln	Arg	Val	Asp	Leu	Pro	Thr	Tyr	Arg	Phe	Gln	Arg	Glu	His	Tyr
	2675					2680					2685			

Trp	Pro	Glu	Thr	Gly	Ile	Pro	Leu	Pro	Gly	Asp	Thr	Ala	Gly	Leu
	2690					2695					2700			
Gly	Leu	Ala	Ala	Ala	Gly	His	Pro	Leu	Leu	Gly	Ala	Ala	Val	Thr
	2705					2710					2715			
Leu	Ala	Asp	Ala	Asp	Gly	Cys	Val	Leu	Thr	Gly	Arg	Leu	Ser	Leu
	2720					2725					2730			
Arg	Thr	His	Pro	Trp	Leu	Ala	Asp	His	Ala	Val	Met	Gly	Ser	Val
	2735					2740					2745			
Leu	Leu	Pro	Gly	Thr	Ala	Leu	Val	Glu	Leu	Ala	Leu	His	Ala	Gly
	2750					2755					2760			
Glu	Arg	Val	Gly	Thr	Arg	Ala	Leu	Asp	Glu	Leu	Thr	Leu	Gln	Ala
	2765					2770					2775			
Pro	Leu	Ile	Leu	Pro	Asn	Glu	Gly	Ala	Val	Gln	Leu	Gln	Val	Val
	2780					2785					2790			
Val	Gly	Ala	Pro	Asp	Ala	Ala	Gly	His	Arg	Thr	Val	Ala	Val	Tyr
	2795					2800					2805			
Ser	Arg	Pro	Asp	Ala	Asp	Gly	Glu	Ala	Trp	Val	Arg	His	Ala	Asp
	2810					2815					2820			
Gly	Leu	Leu	Val	Asp	Glu	Val	Arg	Gly	Ala	Ala	Ala	Asp	Leu	Gly
	2825					2830					2835			
Val	Trp	Pro	Pro	Ala	Gly	Ala	Thr	Ala	Val	Pro	Val	Asp	Asp	Ala
	2840					2845					2850			
Tyr	Ala	Ile	Leu	Glu	Thr	Ser	Gly	Leu	Ala	Tyr	Gly	Pro	Leu	Phe
	2855					2860					2865			
Gln	Gly	Leu	Arg	Ala	Ala	Trp	Arg	Arg	Ala	Gly	Glu	Leu	Phe	Ala
	2870					2875					2880			
Glu	Leu	Ala	Leu	Pro	Thr	Glu	Ala	Gln	Ala	Asp	Ala	Ala	Ala	Phe
	2885					2890					2895			
Gly	Leu	His	Pro	Ala	Leu	Leu	Asp	Ser	Ala	Leu	His	Thr	Leu	Ala
	2900					2905					2910			
Leu	Gly	Asp	Leu	Leu	Ser	Gly	Ala	Asp	Ala	Glu	Glu	Thr	Pro	Gly
	2915					2920					2925			
Ala	Ala	Arg	Leu	Pro	Phe	Ala	Trp	Arg	Gly	Val	Arg	Leu	His	Ala
	2930					2935					2940			
Ala	Gly	Ala	Pro	Ala	Val	Arg	Val	Arg	Leu	Ala	Glu	Ala	Gly	Gln
	2945					2950					2955			
Gly	Ala	Val	Ser	Leu	Glu	Leu	Ala	Asp	Ser	Ala	Gly	Ala	Pro	Val
	2960					2965					2970			
Ala	Ser	Val	Asp	Ser	Leu	Val	Leu	Arg	Ala	Met	Ser	Pro	Glu	Gln
	2975					2980					2985			

Leu Gly Ala Ala Ser Ala Gly Arg Gln Glu Ser Leu Phe Gln Ile
 2990 2995 3000
 Asp Trp Val Glu Pro Ala Ala Asp Arg Thr Ala Ala Ala Thr Asp
 3005 3010 3015
 Val Glu Arg Ala Leu Val Gly Pro Glu Leu Arg Gly Leu Asp Ala
 3020 3025 3030
 Thr Pro Tyr Ala Asp Leu Ala Ala Leu Ala Ala Ala Asp Ser Asp
 3035 3040 3045
 Val Pro Glu Leu Val Phe Ile Thr Thr Arg Ala Glu Ser Glu Pro
 3050 3055 3060
 Glu Gly Leu Pro Gly Thr Val His Val Arg Ala Val Asp Ala Leu
 3065 3070 3075
 Thr His Val Arg Ala Trp Leu Ala Glu Glu Arg Phe Ala Ser Ala
 3080 3085 3090
 Arg Leu Val Phe Val Thr Arg Gly Ala Met Thr Val Gly Ser Asp
 3095 3100 3105
 Glu Ala Val Arg Asp Leu Ala Gly Ala Ala Val Trp Gly Leu Val
 3110 3115 3120
 Arg Ser Ala Gly Thr Glu His Pro Gly Arg Phe Ala Leu Val Asp
 3125 3130 3135
 Leu Asp Asp Asp Asp Val Leu Pro Glu Gln Thr Val Leu Thr Ala
 3140 3145 3150
 Leu Ala Ala Gly Glu Ser Glu Leu Val Val Arg Glu Gly Ser Leu
 3155 3160 3165
 Leu Val Pro Arg Leu Ala Arg Ala Ala Val Val Glu Gly Ser Gly
 3170 3175 3180
 Arg Glu Leu Asp Val Asp Gly Thr Val Leu Val Thr Gly Ala Ser
 3185 3190 3195
 Gly Thr Leu Gly Gly Leu Phe Ala Arg His Leu Val Val Glu Arg
 3200 3205 3210
 Gly Val Arg Arg Leu Leu Leu Val Ser Arg Arg Gly Gly Ala Ala
 3215 3220 3225
 Glu Gly Ala Ala Glu Leu Gly Ala Glu Leu Thr Glu Leu Gly Ala
 3230 3235 3240
 Asp Val Arg Trp Ala Ala Cys Asp Val Ala Asp Arg Glu Ala Leu
 3245 3250 3255
 Glu Ser Val Leu Ala Gly Ile Pro Ala Glu Tyr Pro Leu Ser Gly
 3260 3265 3270
 Val Val His Thr Ala Gly Val Leu Asp Asp Gly Val Val Ser Ser
 3275 3280 3285

Leu Thr Ala Glu Arg Val Ser Ala Val Leu Arg Pro Lys Val Asp
 3290 3295 3300
 Ala Ala Trp Asn Leu His Glu Leu Thr Arg Gly Leu Asp Leu Ser
 3305 3310 3315
 Leu Phe Val Leu Phe Ser Ser Ala Ala Gly Val Phe Gly Gly Ala
 3320 3325 3330
 Gly Gln Ala Asn Tyr Ala Ala Ala Asn Val Phe Leu Asp Ala Leu
 3335 3340 3345
 Ala Gln His Arg Arg Ala Gln Gly Leu Ala Ala Thr Ser Leu Ala
 3350 3355 3360
 Trp Gly Leu Trp Ala Glu Pro Gly Gly Met Ala Gly Ala Leu Asp
 3365 3370 3375
 Ala Asp Asp Val Ser Arg Leu Gly Arg Gly Gly Val Ser Gly Leu
 3380 3385 3390
 Ser Ala Gly Glu Gly Val Ala Leu Phe Asp Ala Ala Ser Ala Ser
 3395 3400 3405
 Glu Gln Ala Leu Phe Val Pro Val Lys Leu Asp Leu Ala Ala Leu
 3410 3415 3420
 Arg Ala Gln Ala Gly Ser Gly Met Leu Pro Pro Leu Leu Ser Gly
 3425 3430 3435
 Leu Val Arg Thr Pro Thr Arg Arg Ala Ala Gly Thr Ala Asn Ala
 3440 3445 3450
 Ala Val Ser Ala Pro Gly Asp Arg Leu Ala Gly Leu Ser Ala Ala
 3455 3460 3465
 Glu Gln Val Ala His Val Leu Glu Leu Val Arg Thr Gln Val Ala
 3470 3475 3480
 Ala Val Leu Gly Tyr Ala Ser Pro Glu Ala Val Glu Lys Asp Ser
 3485 3490 3495
 Ser Phe Arg Glu Leu Gly Phe Asp Ser Leu Thr Ala Val Glu Leu
 3500 3505 3510
 Arg Asn Leu Leu Gly Ala Ala Thr Gly Leu Arg Leu Pro Ala Thr
 3515 3520 3525
 Leu Val Phe Asp Tyr Pro Thr Ser Ala Val Leu Ala Asp His Leu
 3530 3535 3540
 Arg Ser Glu Leu Val Gly Thr Ala Pro Val Thr Ser Ala Pro Val
 3545 3550 3555
 Val Leu Ala Ala Arg Asp Asp Asp Glu Pro Ile Ala Ile Val Gly
 3560 3565 3570
 Leu Gly Cys Arg Tyr Pro Gly Gly Val Glu Ser Pro Asp Asp Leu
 3575 3580 3585

Trp Arg Leu Val Leu Glu Gly Arg Asp Ala Ile Thr Glu Phe Pro
 3590 3595 3600
 Glu Asp Arg Gly Trp Asp Val Asp Ala Leu Phe Asp Ala Asp Pro
 3605 3610 3615
 Asp Gln Gln Gly Thr Ser Tyr Ala Arg Glu Gly Gly Phe Val Arg
 3620 3625 3630
 Asp Ala Gly His Phe Asp Pro Ala Phe Phe Gly Ile Ser Pro Arg
 3635 3640 3645
 Glu Ala Val Ala Met Asp Pro Gln Gln Arg Leu Leu Leu Glu Thr
 3650 3655 3660
 Ser Trp Glu Ala Phe Glu Arg Ala Gly Ile Asp Pro Ala Ala Leu
 3665 3670 3675
 Arg Gly Ser Arg Thr Gly Val Phe Ala Gly Val Met Tyr His Asp
 3680 3685 3690
 Tyr Ala Ser Arg Leu Thr Ala Leu Pro Glu Gly Val Glu Gly Phe
 3695 3700 3705
 Leu Gly Thr Gly Asn Ala Ala Ser Val Ile Ser Gly Arg Leu Ser
 3710 3715 3720
 Tyr Ala Phe Gly Leu Glu Gly Pro Ala Ile Thr Val Asp Thr Ala
 3725 3730 3735
 Cys Ser Ser Ser Leu Val Ala Leu His Leu Ala Val Gln Ala Leu
 3740 3745 3750
 Arg Asn Gly Glu Cys Ser Leu Ala Leu Ala Gly Gly Val Thr Val
 3755 3760 3765
 Met Ala Thr Pro Ala Ala Phe Val Glu Phe Ser Arg Gln Arg Gly
 3770 3775 3780
 Leu Ala Ala Asp Gly Arg Cys Lys Ala Phe Ser Ala Gly Ala Asp
 3785 3790 3795
 Gly Thr Gly Trp Ser Glu Gly Ala Gly Val Leu Leu Val Glu Arg
 3800 3805 3810
 Leu Ser Asp Ala Arg Arg Asn Gly His Pro Val Leu Ala Val Val
 3815 3820 3825
 Arg Gly Ser Ala Ile Asn Gln Asp Gly Ala Ser Asn Gly Leu Thr
 3830 3835 3840
 Ala Pro Asn Gly Pro Ser Gln Gln Arg Val Ile Arg Gln Ala Leu
 3845 3850 3855
 Ala Ser Ala Gly Leu Ser Ala Ala Asp Val Asp Val Val Glu Ala
 3860 3865 3870
 His Gly Thr Gly Thr Thr Leu Gly Asp Pro Ile Glu Ala Gln Ala
 3875 3880 3885

Leu	Leu	Ala	Thr	Tyr	Gly	Gln	Glu	His	Thr	Asp	Glu	Gln	Pro	Leu
	3890					3895					3900			
Leu	Leu	Gly	Ser	Ile	Lys	Ser	Asn	Phe	Gly	His	Thr	Gln	Ala	Ala
	3905					3910					3915			
Ala	Gly	Val	Ala	Gly	Ile	Ile	Lys	Ile	Val	Gln	Ala	Met	Arg	His
	3920					3925					3930			
Gly	Val	Val	Pro	Lys	Thr	Leu	His	Val	Asp	Glu	Pro	Thr	Pro	His
	3935					3940					3945			
Val	Asp	Trp	Ser	Ala	Gly	Ala	Val	Ser	Leu	Leu	Thr	Glu	Gln	Val
	3950					3955					3960			
Ala	Trp	Pro	Glu	Thr	Gly	Arg	Pro	Arg	Arg	Ala	Ala	Ile	Ser	Ser
	3965					3970					3975			
Phe	Gly	Phe	Ser	Gly	Thr	Asn	Ala	His	Ala	Ile	Ile	Glu	Gln	Ala
	3980					3985					3990			
Pro	Asp	Pro	Ala	Pro	Glu	Asp	Leu	Pro	Asp	Ala	Gly	Pro	Asp	Val
	3995					4000					4005			
Arg	Pro	Glu	Pro	Ala	Arg	Thr	Pro	Gly	Ser	Leu	Pro	Trp	Leu	Leu
	4010					4015					4020			
Ser	Ala	Lys	Gly	Ala	Asp	Ala	Leu	Arg	Asp	Gln	Ala	Ala	Arg	Leu
	4025					4030					4035			
Arg	Ala	His	Ala	Ile	Gly	His	Pro	Glu	Leu	Ser	Leu	Ala	Asp	Ile
	4040					4045					4050			
Gly	Tyr	Ala	Leu	Ala	Thr	Ser	Arg	Thr	Ala	Leu	Asp	Arg	Arg	Ala
	4055					4060					4065			
Ala	Val	Val	Ala	Gly	Asp	Arg	Glu	Glu	Phe	Leu	Ala	Gly	Leu	Ala
	4070					4075					4080			
Ala	Leu	Ala	Glu	Gly	Ala	Thr	Ala	Ala	Gly	Leu	Thr	Glu	Gly	Ser
	4085					4090					4095			
Pro	Ala	Gly	Gly	Lys	Leu	Ala	Phe	Leu	Phe	Thr	Gly	Gln	Gly	Ser
	4100					4105					4110			
Gln	Arg	Leu	Ala	Met	Gly	Arg	Glu	Leu	Tyr	Ser	Ala	His	Pro	Val
	4115					4120					4125			
Phe	Ala	Arg	Ala	Leu	Asp	Ala	Val	Cys	Asp	Gly	Leu	Ala	Leu	Asp
	4130					4135					4140			
Val	Pro	Leu	Lys	Gln	Val	Leu	Phe	Gly	Ser	Asp	Ala	Asp	Leu	Leu
	4145					4150					4155			
Asp	Arg	Thr	Ala	Tyr	Thr	Gln	Pro	Ala	Leu	Phe	Ala	Val	Glu	Val
	4160					4165					4170			
Ala	Leu	Phe	Arg	Leu	Val	Glu	Ser	Trp	Gly	Leu	Lys	Pro	Asp	Phe
	4175					4180					4185			

Leu Ala Gly His Ser Ile Gly Glu Ile Thr Ala Ala His Val Ala
 4190 4195 4200
 Gly Val Leu Ser Leu Asp Asp Ala Cys Thr Leu Val Ala Ala Arg
 4205 4210 4215
 Gly Arg Leu Met Gln Ala Leu Pro Thr Gly Gly Val Met Ile Ala
 4220 4225 4230
 Val Glu Ala Ser Glu Asp Glu Val Leu Pro Leu Leu Thr Asp Arg
 4235 4240 4245
 Val Ser Ile Ala Ala Ile Asn Gly Pro Gln Ser Val Val Ile Ala
 4250 4255 4260
 Gly Asp Glu Ala Asp Ala Val Ala Ile Ala Glu Ser Phe Thr Gly
 4265 4270 4275
 Arg Lys Ser Lys Arg Leu Thr Val Ser His Ala Phe His Ser Pro
 4280 4285 4290
 His Met Asp Gly Met Leu Asp Ala Phe Arg Glu Val Ala Glu Gly
 4295 4300 4305
 Leu Ser Tyr Gly Thr Pro Leu Ile Pro Val Val Ser His Leu Thr
 4310 4315 4320
 Gly Thr Leu Val Thr Asp Glu Met Arg Ser Pro Asp Phe Trp Val
 4325 4330 4335
 Arg His Val Arg Glu Ala Val Arg Phe Leu Asp Gly Ile Arg Thr
 4340 4345 4350
 Leu Glu Asp Ala Gly Val Thr Thr Tyr Ile Glu Leu Gly Pro Gly
 4355 4360 4365
 Gly Val Leu Ser Ala Met Gly Gln Ser Cys Val Thr Arg Asp Asp
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 Tyr Thr Ala Arg Leu Asp Ser Val Pro Glu Gly Val Glu Gly Phe Leu
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Gly	Ala	His	Val	Ala	Arg	Trp	Leu	Ala	Glu	Asn	Gly	Ala	Glu	His
1220						1225					1230			
Leu	Leu	Leu	Thr	Ser	Arg	Arg	Gly	Pro	Asp	Ala	Pro	Gly	Ala	Ala
1235						1240					1245			
Ala	Leu	Arg	Asp	Glu	Leu	Thr	Ala	Leu	Gly	Ala	Gln	Val	Thr	Ile
1250						1255					1260			
Ala	Ala	Cys	Asp	Val	Ser	Asp	Arg	Asp	Ala	Val	Ala	Ala	Leu	Ile
1265						1270					1275			
Ala	Ala	Val	Pro	Ala	Asp	Gln	Pro	Leu	Thr	Ala	Val	Val	His	Thr
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1295						1300					1305			
Gln	Ile	Glu	Arg	Val	Leu	Arg	Val	Lys	Val	Asp	Ala	Thr	Leu	His
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Phe	Ser	Ser	Phe	Ala	Ala	Thr	Phe	Gly	Ala	Pro	Gly	Gln	Gly	Asn
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Tyr	Ala	Pro	Gly	Asn	Ala	Phe	Leu	Asp	Ala	Phe	Ala	Glu	Tyr	Arg
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Arg	Ala	Ser	Gly	Leu	Pro	Ala	Thr	Ser	Ile	Ala	Trp	Gly	Pro	Trp
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Ala Leu	Ala Gln Gln Leu Thr	Gly Arg Pro Glu Ala	Glu Gln Glu	1475	1480	1485
Arg Leu	Leu Leu Glu Leu Val	Arg Thr Ala Val Ala	Ala Val Leu	1490	1495	1500
Gly Tyr	Ala Gly Pro Asp Ala	Val Glu Ala Gly Arg	Ala Phe Lys	1505	1510	1515
Glu Leu	Gly Phe Asp Ser Leu	Thr Ser Val Glu Leu	Arg Asn Arg	1520	1525	1530
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Pro Ala	Glu His	Pro Leu	Thr Ala	Val Val	His Thr	Ala Gly	Val						
1535			1540			1545							
Leu Asp	Asp Gly	Val Leu	Glu Ala	Leu Thr	Pro Glu	Arg Ile	Asp						
1550			1555			1560							
Ala Val	Leu Pro	Ala Lys	Val Asp	Ala Ala	Val His	Leu His	Glu						
1565			1570			1575							
Leu Thr	Arg Glu	Leu Asp	Leu Ala	Ala Phe	Val Leu	Phe Ser	Ala						
1580			1585			1590							
Ala Ala	Gly Thr	Leu Gly	Gly Pro	Gly Gln	Ala Asn	Tyr Ala	Ala						
1595			1600			1605							
Ala Asn	Thr Phe	Leu Asp	Ala Leu	Ala His	Arg Arg	Arg Ala	Glu						
1610			1615			1620							
Gly Leu	Pro Ala	Thr Ala	Leu Ala	Trp Gly	Leu Trp	Ala Glu	Arg						
1625			1630			1635							
Ser Gly	Met Thr	Gly Asp	Leu Ala	Asp Ala	Asp Leu	Glu Arg	Ile						
1640			1645			1650							
Ser Arg	Ala Gly	Val Ala	Ala Leu	Ser Ser	Ala Glu	Gly Leu	Ala						
1655			1660			1665							
Leu Leu	Asp Thr	Ala Arg	Ala Val	Gly Asp	Pro Thr	Ala Val	Pro						

1670						1675						1680			
Met	His	Leu	Asp	Leu	Ala	Ser	Leu	Arg	His	Ala	Asp	Ala	Ser	Met	
1685						1690					1695				
Val	Pro	Ala	Leu	Leu	Arg	Gly	Leu	Val	Arg	Ala	Pro	Ala	Arg	Arg	
1700						1705					1710				
Ser	Val	Glu	Ser	Pro	Gly	Ala	Ala	Pro	Ala	Gly	Gly	Leu	Ala	Glu	
1715						1720					1725				
Arg	Leu	Leu	Pro	Leu	Thr	Ala	Ala	Glu	Arg	Asp	Arg	Leu	Leu	Leu	
1730						1735					1740				
Asp	Thr	Val	Arg	Val	Gln	Val	Ala	Ala	Val	Leu	Gly	Tyr	Pro	Gly	
1745						1750					1755				
Pro	Glu	Ala	Val	Asp	Pro	Gly	Arg	Ala	Phe	Lys	Glu	Leu	Gly	Phe	
1760						1765					1770				
Asp	Ser	Leu	Thr	Ala	Val	Glu	Leu	Arg	Asn	Arg	Leu	Gly	Ser	Ala	
1775						1780					1785				
Thr	Gly	Val	Arg	Leu	Pro	Ala	Thr	Leu	Val	Phe	Asp	Tyr	Pro	Thr	
1790						1795					1800				
Pro	Asn	Ala	Leu	Ser	Ala	Phe	Leu	Arg	Thr	Glu	Leu	Leu	Gly	Asp	
1805						1810					1815				
Ala	Ala	Asp	Ser	Ala	Pro	Val	Ala	Ala	Val	Thr	Ala	Arg	Asp	Asp	
1820						1825					1830				
Glu	Pro	Ile	Ala	Ile	Val	Gly	Met	Ser	Cys	Arg	Tyr	Pro	Gly	Gly	
1835						1840					1845				
Val	Thr	Thr	Pro	Glu	Glu	Leu	Trp	Gln	Leu	Val	Ala	Gly	Ser	Val	
1850						1855					1860				
Asp	Ala	Ile	Ser	Pro	Phe	Pro	Thr	Asp	Arg	Gly	Trp	Asn	Leu	Asp	
1865						1870					1875				
Ala	Leu	Tyr	Asp	Ala	Asp	Pro	Gly	Arg	Ala	Gly	Thr	Ser	Tyr	Thr	
1880						1885					1890				
Arg	Glu	Gly	Gly	Phe	Leu	His	Asp	Ala	Ala	Asp	Phe	Asp	Pro	Asp	
1895						1900					1905				
Val	Phe	Gly	Ile	Asn	Pro	Arg	Glu	Ala	Leu	Ala	Met	Asp	Pro	His	
1910						1915					1920				
Gln	Arg	Leu	Leu	Leu	Glu	Thr	Ser	Trp	Glu	Ala	Phe	Glu	Gln	Ala	
1925						1930					1935				
Gly	Ile	Ala	Pro	Ser	Ser	Met	Arg	Gly	Ser	Arg	Thr	Gly	Val	Phe	
1940						1945					1950				
Ala	Gly	Val	Met	Tyr	His	Asp	Tyr	Leu	Thr	Arg	Leu	Pro	Ala	Val	
1955						1960					1965				
Pro	Glu	Gly	Leu	Glu	Gly	Tyr	Leu	Gly	Thr	Gly	Thr	Ala	Gly	Ser	

	1970					1975						1980				
Val	Ala	Ser	Gly	Arg	Ile	Ser	Tyr	Thr	Phe	Gly	Leu	Glu	Gly	Pro		
	1985					1990					1995					
Ala	Val	Thr	Val	Asp	Thr	Ala	Cys	Ser	Ser	Ser	Leu	Val	Ala	Leu		
	2000					2005					2010					
His	Leu	Ala	Ala	Gln	Ala	Leu	Arg	Asn	Gly	Glu	Cys	Asp	Met	Ala		
	2015					2020					2025					
Leu	Ala	Gly	Gly	Val	Thr	Val	Met	Ser	Thr	Pro	Asp	Thr	Phe	Ile		
	2030					2035					2040					
Asp	Phe	Ser	Arg	Gln	Arg	Gly	Leu	Ser	Gly	Asn	Gly	Arg	Cys	Lys		
	2045					2050					2055					
Ser	Phe	Ser	Ala	Asp	Ala	Asp	Gly	Thr	Gly	Trp	Ala	Glu	Gly	Ala		
	2060					2065					2070					
Gly	Met	Ile	Leu	Val	Glu	Arg	Leu	Ser	Asp	Ala	Arg	Arg	Asn	Gly		
	2075					2080					2085					
His	Gln	Val	Leu	Ala	Val	Val	Arg	Gly	Thr	Ala	Val	Asn	Gln	Asp		
	2090					2095					2100					
Gly	Ala	Ser	Asn	Gly	Leu	Thr	Ala	Pro	Asn	Gly	Pro	Ser	Gln	Gln		
	2105					2110					2115					
Arg	Val	Ile	Arg	Gln	Ala	Leu	Ala	Asn	Ala	Gly	Leu	Thr	Thr	Ala		
	2120					2125					2130					
Glu	Val	Asp	Val	Val	Glu	Ala	His	Gly	Thr	Gly	Thr	Thr	Leu	Gly		
	2135					2140					2145					
Asp	Pro	Ile	Glu	Ala	Gln	Ala	Leu	Leu	Ala	Thr	Tyr	Gly	Gln	Asp		
	2150					2155					2160					
Arg	Pro	Ala	Gly	Gln	Pro	Leu	Arg	Leu	Gly	Ser	Ile	Lys	Ser	Asn		
	2165					2170					2175					
Ile	Gly	His	Thr	Gln	Ala	Ala	Ala	Gly	Ala	Ala	Gly	Ile	Ile	Lys		
	2180					2185					2190					
Met	Ile	Leu	Ala	Met	Arg	His	Gly	Val	Met	Pro	Pro	Ser	Leu	His		
	2195					2200					2205					
Ile	Gly	Glu	Pro	Ser	Pro	His	Ile	Asp	Trp	Thr	Ala	Gly	Ala	Val		
	2210					2215					2220					
Ser	Leu	Leu	Thr	Glu	Ala	Ala	Glu	Trp	Pro	Asp	Ala	Gly	Arg	Pro		
	2225					2230					2235					
Arg	Arg	Ala	Gly	Ile	Ser	Ser	Phe	Gly	Val	Ser	Gly	Thr	Asn	Ala		
	2240					2245					2250					
His	Val	Ile	Ile	Glu	Gln	Pro	Pro	Val	Glu	Glu	Pro	Ala	Thr	Ala		
	2255					2260					2265					
Thr	Glu	Thr	Gly	Ser	Gly	Thr	Gly	Leu	Pro	Ala	Gly	Thr	Pro	Leu		

2270						2275						2280
Pro Phe	Ala Leu	Ser Gly	Arg Thr	Pro Ala	Ala Leu	Arg Thr	Pro Ala	Ala Leu	Arg Ala	Gln		
2285						2290						2295
Ala Ala	Arg Leu	Ile Gly	His Leu	Ala Pro	Arg Pro	Glu Ala	Ala Ala	Pro Arg	Pro Glu	Ala Ala		
2300						2305						2310
Pro Ala	Asp Val	Ala Leu	Ser Leu	Ala Thr	Thr Thr	Arg Thr	Ala Ala	Thr Thr	Arg Thr	Ala Leu		
2315						2320						2325
Asp Arg	Arg Ala	Ala Val	Ile Ala	His Asp	Arg Thr	Glu Leu	Leu Leu	Leu Leu	Thr Glu	Leu Leu		
2330						2335						2340
Ala Gly	Leu Thr	Ala Leu	Ala Glu	Gly His	Asp Ser	Ala Arg	Leu Leu	Leu Leu	Thr Ala	Arg Leu		
2345						2350						2355
Val Gln	His Thr	Ala Ala	Asp Gly	Arg Thr	Ala Ile	Leu Phe	Thr Thr	Thr Thr	Ala Ile	Leu Phe	Thr	
2360						2365						2370
Gly Gln	Gly Ser	Gln Arg	Pro Gly	Met Gly	Arg Glu	Leu Tyr	Glu Glu	Tyr Glu	Leu Tyr	Glu		
2375						2380						2385
Thr Tyr	Pro Ala	Phe Ala	Glu Ala	Leu Asp	Ala Val	Cys Ala	Glu Glu	Ala Glu	Val Cys	Ala Glu		
2390						2395						2400
Leu Asp	Pro His	Leu Glu	Gln Pro	Leu Lys	Glu Val	Leu Phe	Thr Thr	Thr Thr	Ala Val	Leu Phe	Thr	
2405						2410						2415
Ala Asp	Gly Asp	Leu Leu	Asn Arg	Thr Gly	Arg Thr	Gln Pro	Ala Ala	Ala Ala	Thr Gln	Pro Ala		
2420						2425						2430
Leu Phe	Ala Leu	Glu Thr	Ala Leu	Tyr Arg	Leu Val	Glu Ser	Trp Thr	Thr Thr	Val Glu	Ser Trp		
2435						2440						2445
Gly Val	Arg Pro	Asp Phe	Val Ala	Gly His	Ser Ile	Gly Glu	Ile Ile	Ile Ile	Gly Glu	Ile		
2450						2455						2460
Thr Ala	Ala His	Val Ala	Gly Val	Leu Ser	Leu Pro	Asp Ala	Ala Ala	Ala Ala	Thr Asp	Ala Ala		
2465						2470						2475
Thr Leu	Val Ala	Ala Arg	Gly Arg	Leu Met	Gln Glu	Leu Pro	Glu Glu	Pro Glu	Leu Leu	Pro Glu		
2480						2485						2490
Gly Gly	Ala Met	Ile Ala	Leu Thr	Ala Thr	Glu Asp	Glu Val	Leu Leu	Leu Leu	Ala Val	Leu		
2495						2500						2505
Pro Leu	Leu Ala	Gly His	Glu Asp	Arg Ile	Gly Ile	Ala Ala	Val Val	Val Val	Ala Ala	Val		
2510						2515						2520
Asn Ser	Ala Ser	Ser Val	Val Ile	Ser Gly	Glu Glu	Gly Leu	Ala Ala	Ala Ala	Thr Gly	Leu Ala		
2525						2530						2535
Leu Glu	Ile Ala	Ala Glu	Phe Glu	Arg Arg	Gly Arg	Arg Thr	Lys Thr	Lys Thr	Arg Arg	Thr Lys		
2540						2545						2550
Arg Leu	Thr Val	Ser His	Ala Phe	His Ser	Pro Leu	Met Asp	Gly Thr	Gly Thr	Leu Met	Asp Gly		
2555						2560						2565
Met Leu	Asp Ala	Phe Arg	Glu Val	Ala Glu	Ser Leu	Thr Tyr	Arg Thr	Arg Thr	Leu Thr	Tyr Arg		

2570						2575						2580		
Ala	Pro	Ala	Ile	Pro	Val	Val	Thr	Leu	Leu	Thr	Gly	Thr	Val	Ala
2585						2590					2595			
Gly	Asp	Glu	Leu	Arg	Thr	Ala	Glu	His	Trp	Val	Ser	His	Val	Arg
2600						2605					2610			
Glu	Ala	Val	Arg	Phe	Leu	Asp	Gly	Ile	Arg	Thr	Leu	Asp	Ala	Glu
2615						2620					2625			
His	Val	Thr	Thr	Tyr	Leu	Glu	Leu	Gly	Pro	Gln	Gly	Val	Leu	Ser
2630						2635					2640			
Gly	Leu	Gly	Arg	Asp	Cys	Leu	Thr	Asp	Pro	Ala	Asp	Pro	Ala	Asp
2645						2650					2655			
Thr	Ala	Val	Phe	Val	Pro	Ala	Leu	Arg	Arg	Asp	Arg	Gly	Glu	Ala
2660						2665					2670			
Glu	Ala	Leu	Thr	Ala	Ala	Ile	Ala	Ala	Ala	His	Thr	Arg	Gly	Val
2675						2680					2685			
Pro	Leu	Asp	Trp	Ser	Ala	Tyr	Phe	Ala	Gly	Thr	Gly	Ala	Arg	Arg
2690						2695					2700			
Val	Glu	Leu	Pro	Thr	Tyr	Ala	Phe	Gln	Arg	Glu	Arg	Phe	Trp	Leu
2705						2710					2715			
Glu	Ala	Pro	Ala	Gly	Tyr	Ile	Gly	Asp	Val	Glu	Ser	Ala	Gly	Met
2720						2725					2730			
Gly	Ala	Ala	His	His	Pro	Leu	Leu	Gly	Ala	Ala	Val	Ala	Leu	Ala
2735						2740					2745			
Asp	Gly	Glu	Gly	Phe	Leu	Phe	Thr	Gly	Arg	Leu	Ser	Leu	Asp	Thr
2750						2755					2760			
His	Pro	Trp	Leu	Ala	Asp	His	Ala	Val	Met	Gly	Asn	Val	Leu	Leu
2765						2770					2775			
Pro	Gly	Thr	Ala	Phe	Val	Glu	Leu	Ala	Ile	Arg	Ala	Gly	Asp	Gln
2780						2785					2790			
Ala	Gly	Cys	Asp	Leu	Leu	Glu	Glu	Leu	Thr	Leu	Glu	Ala	Pro	Leu
2795						2800					2805			
Ile	Leu	Ala	Pro	Gln	Ala	Ala	Ala	Arg	Leu	Gln	Ile	Val	Val	Gly
2810						2815					2820			
Ala	Pro	Asp	Gly	Ser	Gly	Arg	Arg	Thr	Leu	Asp	Val	Tyr	Ser	Ser
2825						2830					2835			
Asp	Pro	Asp	Ala	Pro	Ala	Asp	Glu	Pro	Trp	Thr	Arg	His	Ala	Gly
2840						2845					2850			
Gly	Ile	Leu	Ala	Thr	Gly	Ala	Gln	Ala	Pro	Ala	Phe	Asp	Leu	Thr
2855						2860					2865			
Ala	Trp	Pro	Pro	Pro	Gly	Ala	Glu	Ala	Val	Gly	Val	Asp	Gly	Leu

2870						2875						2880			
Tyr	Glu	His	Leu	Gly	Arg	Gly	Gly	Phe	Ala	Tyr	Gly	Pro	Val	Phe	
	2885					2890					2895				
Gln	Gly	Leu	Arg	Ala	Ala	Trp	Leu	Leu	Gly	Asp	Asp	Val	Tyr	Ala	
	2900					2905					2910				
Glu	Val	Ala	Leu	Pro	Asp	Asp	Arg	Gln	Ala	Glu	Ala	Ala	Arg	Phe	
	2915					2920					2925				
Gly	Leu	His	Pro	Ala	Leu	Leu	Asp	Ala	Ala	Leu	His	Ala	Thr	Phe	
	2930					2935					2940				
Val	Gln	Pro	Ser	Pro	Asp	Gly	Asp	Gln	Gln	Gly	Arg	Leu	Pro	Phe	
	2945					2950					2955				
Ser	Trp	Arg	Asp	Val	Ser	Leu	His	Ala	Val	Gly	Ala	Ser	Ala	Leu	
	2960					2965					2970				
Arg	Val	Arg	Leu	Thr	Pro	Asp	Gly	Arg	Asp	Thr	Leu	Ser	Leu	Gln	
	2975					2980					2985				
Leu	Ala	Asp	Thr	Thr	Gly	Ala	Pro	Val	Ala	Ala	Val	Gly	His	Leu	
	2990					2995					3000				
Thr	Leu	Arg	Pro	Val	Ser	Ala	Asp	Gln	Leu	Gly	Ser	Ala	Arg	Ser	
	3005					3010					3015				
Ala	His	His	Glu	Ser	Leu	Phe	Arg	Ile	Asp	Trp	Ala	Thr	Val	Pro	
	3020					3025					3030				
Leu	Pro	Ser	Asp	Ala	Pro	Ala	Ala	Thr	Asp	Glu	Trp	Ala	Val	Ile	
	3035					3040					3045				
Ala	Ala	Asp	Gly	Gly	Thr	Asp	Gly	Gly	Thr	Asp	Gly	Gly	Thr	Asp	
	3050					3055					3060				
Gly	Gly	Ile	Pro	Ala	Ala	Leu	Pro	Gly	Arg	Val	His	Thr	Gly	Leu	
	3065					3070					3075				
Asp	Ala	Leu	Gly	Ala	Ala	Val	Asp	Ala	Gly	Ala	Pro	Val	Pro	Ala	
	3080					3085					3090				
His	Val	Leu	Val	His	His	Thr	Pro	Ala	Ala	Thr	Thr	Ala	Asp	Ala	
	3095					3100					3105				
Val	His	Ala	Ala	Thr	His	Glu	Ala	Leu	Arg	Leu	Val	Arg	Ala	Trp	
	3110					3115					3120				
Leu	Ala	Asp	Asp	Arg	Phe	Ala	Ala	Ser	Arg	Leu	Val	Phe	Val	Thr	
	3125					3130					3135				
Arg	Gly	Ala	Ile	Ala	Thr	Gln	Ser	Asp	Trp	Asp	Leu	Thr	Asp	Leu	
	3140					3145					3150				
Thr	His	Ala	Pro	Val	Trp	Gly	Leu	Val	Arg	Thr	Ala	Gln	Ser	Glu	
	3155					3160					3165				
Asn	Pro	Asp	Arg	Phe	Val	Leu	Ala	Asp	Leu	Asp	Ala	Asp	Pro	Ala	

3170						3175									3180
Ser	Thr	Asp	Ala	Leu	Ala	Ala	Ala	Leu	Ala	Thr	Gly	Glu	Pro	Gln	
	3185					3190					3195				
Leu	Ala	Val	Arg	Arg	Gly	Thr	Val	His	Ala	Pro	Arg	Leu	Ala	Arg	
	3200					3205					3210				
Val	Pro	Ala	Ala	Thr	Pro	Leu	Thr	Pro	Pro	Pro	Gly	Glu	Ser	Ala	
	3215					3220					3225				
Trp	Arg	Met	Asp	Ile	Glu	Asp	Lys	Gly	Thr	Leu	Asp	His	Leu	Thr	
	3230					3235					3240				
Leu	Val	Pro	Ser	Pro	Glu	Ser	Ala	Ala	Pro	Leu	Glu	Pro	Gly	Gln	
	3245					3250					3255				
Val	Arg	Val	Ala	Val	Arg	Ala	Ala	Gly	Leu	Asn	Phe	Arg	Asp	Val	
	3260					3265					3270				
Leu	Asn	Ala	Leu	Gly	Met	Tyr	Pro	Gly	Asp	Pro	Gly	Leu	Met	Gly	
	3275					3280					3285				
Ser	Glu	Gly	Ala	Gly	Ile	Val	Val	Glu	Thr	Gly	Pro	Gly	Val	Thr	
	3290					3295					3300				
Gly	Leu	Ala	Pro	Gly	Asp	Arg	Val	Met	Gly	Met	Leu	Pro	Gly	Ser	
	3305					3310					3315				
Phe	Gly	Pro	Leu	Ala	Val	Val	Asp	Arg	Arg	Met	Ile	Ala	Pro	Met	
	3320					3325					3330				
Pro	Glu	Gly	Trp	Thr	Phe	Ala	Glu	Ala	Ala	Ser	Val	Pro	Ile	Val	
	3335					3340					3345				
Phe	Met	Thr	Ala	Tyr	Tyr	Ala	Leu	His	Asp	Leu	Ala	Gly	Leu	Gln	
	3350					3355					3360				
Gly	Gly	Glu	Ser	Leu	Leu	Val	His	Ala	Ala	Ala	Gly	Gly	Val	Gly	
	3365					3370					3375				
Met	Ala	Ala	Val	Gln	Leu	Ala	Arg	His	Trp	Gly	Ala	Asp	Val	Tyr	
	3380					3385					3390				
Ala	Thr	Ala	Ser	Pro	Ala	Lys	Trp	Asp	Thr	Leu	Arg	Gly	Leu	Gly	
	3395					3400					3405				
Leu	Gly	Asp	Asp	Arg	Ile	Ala	Ser	Ser	Arg	Thr	Leu	Asp	Phe	Glu	
	3410					3415					3420				
Glu	Thr	Phe	Arg	Thr	Ala	Thr	Gly	Gly	Arg	Gly	Val	Asp	Val	Val	
	3425					3430					3435				
Leu	Asp	Ser	Leu	Ala	Arg	Glu	Phe	Val	Asp	Ala	Ser	Leu	Arg	Leu	
	3440					3445					3450				
Leu	Pro	Arg	Gly	Gly	Arg	Phe	Val	Glu	Met	Gly	Lys	Thr	Asp	Val	
	3455					3460					3465				
Arg	Ser	Pro	Gln	Asp	Val	Ala	Asp	Ala	His	Pro	Gly	Val	Ser	Tyr	

3470						3475						3480
Gln Ala Phe Asp Leu Thr	Glu Ala Gly Leu Asp Arg	Ile Gln Glu										
3485					3490					3495		
Met Leu Thr Glu Leu Leu	Thr Leu Phe Arg Ser Gly	Ala Leu Arg										
3500					3505					3510		
Pro Val Pro Val Ser Ala	Trp Asp Leu Arg Gln Ala	Pro Glu Ala										
3515					3520					3525		
Phe Arg Tyr Leu Ser Gln	Ala Arg His Val Gly Lys	Ile Val Leu										
3530					3535					3540		
Thr Leu Pro Gly Glu Trp	Asn Ser Gln Gly Thr Val	Leu Ile Thr										
3545					3550					3555		
Gly Gly Thr Gly Thr Leu	Gly Ala Val Val Ala Arg	His Ala Val										
3560					3565					3570		
Thr Thr Arg Gly Ala Arg	Arg Leu Leu Leu Thr Ser	Arg Arg Gly										
3575					3580					3585		
Glu Ala Ala Ala Gly Ala	Ala Glu Leu Ala Ala Glu	Leu Arg Glu										
3590					3595					3600		
Leu Gly Ala Glu Val Thr	Ile Ala Ala Cys Asp Ala	Ala Asp Arg										
3605					3610					3615		
Asp Ala Leu Ala Ala Leu	Ile Glu Ser Ile Pro Ser	Glu His Pro										
3620					3625					3630		
Leu Thr Ala Val Ile His	Thr Ala Gly Val Leu Asp	Asp Gly Val										
3635					3640					3645		
Val Asp Ser Leu Thr Pro	Glu Arg Leu Ser Thr Val	Leu Arg Pro										
3650					3655					3660		
Lys Val Asp Ala Ala Trp	Asn Leu His Glu Leu Thr	Arg His Leu										
3665					3670					3675		
Asp Leu Ala Asp Phe Val	Leu Phe Ser Ser Ala Ala	Gly Thr Phe										
3680					3685					3690		
Gly Gly Ala Gly Gln Ala	Asn Tyr Ala Ala Ala Asn	Val Phe Leu										
3695					3700					3705		
Asp Ala Leu Ala Arg His	Arg His Ala His Gly Leu	Ala Ala Thr										
3710					3715					3720		
Ser Leu Ala Trp Gly Leu	Trp Ala Glu Ala Ser Gly	Met Thr Gly										
3725					3730					3735		
Glu Leu Asp Thr Ala Asp	Lys Asp Arg Met Thr Arg	Ser Gly Val										
3740					3745					3750		
Leu Gly Leu Ser Ser Glu	Glu Gly Val Ala Leu Leu	Asp Thr Ala										
3755					3760					3765		
Arg Leu Thr Gly Asp Ala	Leu Leu Val Pro Met His	Leu Asp Leu										

3770						3775						3780
Ala Pro	Leu Arg	Arg Thr	Asp	Ala Ser	Met Val	Pro	Ala Leu	Leu				
3785			3790			3795						
Arg Gly	Leu Val	Arg Ala	Pro	Ala Arg	Arg Ala	Val	Gly Ala	Thr				
3800			3805			3810						
Ala Ala	Gly Ala	Gly Thr	Pro	Leu Val	Glu Arg	Leu	Val Arg	Leu				
3815			3820			3825						
Pro Glu	Asn Glu	Arg Asp	Pro	Leu Leu	Leu Asp	Leu	Val Arg	Gln				
3830			3835			3840						
Gln Val	Ala Ala	Val Leu	Gly	His Ala	Thr Pro	Asp	Ala Val	Glu				
3845			3850			3855						
Pro Thr	Arg Ala	Phe Lys	Asp	Leu Gly	Phe Asp	Ser	Leu Thr	Ala				
3860			3865			3870						
Val Glu	Phe Arg	Asn Arg	Leu	Gly Ala	Thr Ala	Gly	Ile Arg	Leu				
3875			3880			3885						
Pro Ala	Thr Leu	Val Phe	Asp	Tyr Pro	Thr Pro	Thr	Val Leu	Ala				
3890			3895			3900						
Gly Tyr	Leu Lys	Asp Glu	Leu	Leu Gly	Ser Glu	Ala	Ala Ala	Ala				
3905			3910			3915						
Leu Pro	Lys Leu	Ala Ala	Thr	Ala Val	Glu Gly	Asp	Asp Pro	Ile				
3920			3925			3930						
Ala Ile	Val Ala	Met Ser	Cys	Arg Phe	Pro Gly	Asp	Val Arg	Thr				
3935			3940			3945						
Pro Glu	Asp Leu	Trp Glu	Leu	Leu Ala	Glu Gly	Arg	Asp Gly	Ile				
3950			3955			3960						
Ser Asp	Leu Pro	Asp Asp	Arg	Gly Trp	Asp Thr	Glu	Ala Leu	Tyr				
3965			3970			3975						
Asp Pro	Asp Pro	Asp Ser	Pro	Gly Thr	Ser Tyr	Ala	Arg Glu	Gly				
3980			3985			3990						
Gly Phe	Phe Tyr	Asp Ala	His	His Phe	Asp Pro	Ala	Phe Phe	Gly				
3995			4000			4005						
Ile Asn	Pro Arg	Glu Ala	Leu	Ala Met	Asp Pro	Gln	Gln Arg	Leu				
4010			4015			4020						
Leu Leu	Glu Thr	Ser Trp	Glu	Ala Phe	Glu Arg	Ala	Gly Ile	Asp				
4025			4030			4035						
Pro Thr	Gly Leu	Arg Gly	Lys	Gln Val	Gly Val	Phe	Val Gly	Gln				
4040			4045			4050						
Met His	Asn Asp	Tyr Val	Ser	Arg Leu	Asn Thr	Val	Pro Glu	Gly				
4055			4060			4065						
Val Glu	Gly Tyr	Leu Gly	Thr	Gly Gly	Ser Ser	Ser	Ile Ala	Ser				

4070						4075						4080			
Gly	Arg	Val	Ser	Tyr	Thr	Phe	Asp	Phe	Glu	Gly	Pro	Ala	Val	Thr	
	4085					4090					4095				
Val	Asp	Thr	Ala	Cys	Ser	Ser	Ser	Leu	Val	Ala	Leu	His	Leu	Ala	
	4100					4105					4110				
Ala	Gln	Ala	Leu	Arg	Asn	Gly	Glu	Cys	Thr	Leu	Ala	Leu	Ala	Gly	
	4115					4120					4125				
Gly	Val	Thr	Ile	Ile	Thr	Thr	Pro	Asp	Val	Phe	Thr	Glu	Phe	Ser	
	4130					4135					4140				
Arg	Gln	Arg	Gly	Leu	Ala	Ser	Asp	Gly	Arg	Cys	Lys	Pro	Phe	Ala	
	4145					4150					4155				
Glu	Ala	Ala	Asp	Gly	Thr	Ala	Trp	Gly	Glu	Gly	Val	Gly	Met	Leu	
	4160					4165					4170				
Leu	Val	Glu	Arg	Leu	Ser	Asp	Ala	Arg	Arg	Asn	Gly	His	Gln	Val	
	4175					4180					4185				
Leu	Ala	Val	Val	Arg	Gly	Thr	Ala	Val	Asn	Gln	Asp	Gly	Ala	Ser	
	4190					4195					4200				
Asn	Gly	Leu	Thr	Ala	Pro	Asn	Gly	Pro	Ser	Gln	Gln	Arg	Val	Ile	
	4205					4210					4215				
Arg	Gln	Ala	Leu	Ala	Asn	Ala	Gly	Leu	Thr	Ala	Ala	Glu	Val	Asp	
	4220					4225					4230				
Ala	Val	Glu	Ala	His	Gly	Thr	Gly	Thr	Arg	Leu	Gly	Asp	Pro	Ile	
	4235					4240					4245				
Glu	Ala	Gln	Ala	Leu	Leu	Ala	Thr	Tyr	Gly	Gln	Asp	Arg	Pro	Glu	
	4250					4255					4260				
Gly	Ser	Pro	Leu	Trp	Leu	Gly	Ser	Ile	Lys	Ser	Asn	Phe	Gly	His	
	4265					4270					4275				
Thr	Gln	Ala	Ala	Ala	Gly	Val	Ala	Gly	Ile	Ile	Lys	Met	Val	Gln	
	4280					4285					4290				
Ala	Met	His	His	Gly	Val	Leu	Pro	Lys	Thr	Leu	His	Val	Asp	Ala	
	4295					4300					4305				
Pro	Ser	Pro	His	Val	Asp	Trp	Ser	Ala	Gly	Ala	Val	Ser	Leu	Leu	
	4310					4315					4320				
Thr	Glu	Gln	Met	Ala	Trp	Pro	Glu	Thr	Gly	Arg	Pro	Arg	Arg	Ala	
	4325					4330					4335				
Gly	Val	Ser	Ser	Phe	Gly	Met	Ser	Gly	Thr	Asn	Ala	His	Ala	Ile	
	4340					4345					4350				
Ile	Glu	Leu	Ala	Pro	Asp	Ala	Ala	Thr	Pro	Ser	Ala	Ala	Arg	Pro	
	4355					4360					4365				
Glu	Pro	Ala	Pro	Ala	Ala	Leu	Pro	Trp	Asn	Leu	Ser	Ala	Arg	Thr	

4370						4375								4380
Pro Asp	Ala Leu	Arg Ala	Gln Gly	Glu Arg	Leu Leu	Ser His	Leu							
4385			4390			4395								
Glu Thr	His Cys	Glu Thr	His Pro	Glu Thr	Val Leu	Ala Asp	Ile							
4400			4405			4410								
Gly His	Ser Leu	Thr Thr	Gly Arg	Ala Leu	Phe Glu	His Arg	Ala							
4415			4420			4425								
Thr Val	Val Ala	Gly Asp	Arg Asp	Gly Phe	Arg Ala	Gly Leu	Ala							
4430			4435			4440								
Ala Leu	Ala Glu	Gly Arg	Thr Ala	Ala Gly	Leu Ile	Gln Gly	Ser							
4445			4450			4455								
Ser Ser	Thr Gly	Gly Arg	Thr Ala	Phe Leu	Phe Thr	Gly Gln	Gly							
4460			4465			4470								
Ser Gln	Arg Leu	Gly Met	Gly Arg	Glu Leu	Tyr Glu	Ala Tyr	Pro							
4475			4480			4485								
Val Phe	Ala Arg	Ala Leu	Asp Glu	Val Cys	Ala Arg	Leu Glu	Leu							
4490			4495			4500								
Pro Leu	Pro Leu	Lys Asp	Val Leu	Phe Gly	Thr Asp	Thr Gly	Leu							
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Leu Asn	Glu Thr	Ala Tyr	Thr Gln	Pro Ala	Leu Phe	Ala Val	Glu							
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Val Ala	Leu Phe	Arg Leu	Val Glu	Ser Trp	Gly Leu	Lys Pro	Asp							
4535			4540			4545								
Phe Leu	Ala Gly	His Ser	Ile Gly	Glu Ile	Ala Ala	Ala His	Val							
4550			4555			4560								
Ala Gly	Val Leu	Ser Leu	Glu Asp	Ala Cys	Ala Leu	Val Ser	Ala							
4565			4570			4575								
Arg Gly	Arg Leu	Met Gly	Ala Leu	Pro Gly	Gly Gly	Val Met	Ile							
4580			4585			4590								
Ala Val	Gln Ala	Ser Glu	Gly Glu	Val Leu	Pro Leu	Leu Thr	Asp							
4595			4600			4605								
Arg Val	Ser Ile	Ala Ala	Ile Asn	Gly Pro	Gln Ser	Val Val	Ile							
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Ala Gly	Asp Glu	Ala Asp	Ala Val	Ala Ile	Val Glu	Ser Phe	Ser							
4625			4630			4635								
Asp Arg	Lys Ser	Lys Arg	Leu Thr	Val Ser	His Ala	Phe His	Ser							
4640			4645			4650								
Pro His	Met Asp	Gly Met	Leu Asp	Asp Phe	Arg Ala	Val Ala	Glu							
4655			4660			4665								
Gly Leu	Ser Tyr	Gly Ala	Pro Arg	Ile Pro	Val Val	Ser Asn	Leu							

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Thr	Gly	Ala	Leu	Val	Ser	Asp	Glu	Met	Gly	Ser	Ala	Asp	Phe	Trp
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	4715					4720					4725			
Asp	Gly	Ile	Leu	Ser	Ala	Met	Ala	Gln	Glu	Cys	Ile	Thr	Gly	Glu
	4730					4735					4740			
Gly	Ala	Ala	Phe	Ala	Pro	Val	Leu	Arg	Ala	Gly	Arg	Asp	Glu	Ala
	4745					4750					4755			
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	4760					4765					4770			
Pro	Val	Asp	Trp	Gln	Ala	Phe	Tyr	Ala	Pro	Ala	Gly	Ala	Gln	Arg
	4775					4780					4785			
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	4790					4795					4800			
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	4805					4810					4815			
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	4820					4825					4830			
Ser	Asp	Gly	Phe	Leu	Phe	Thr	Gly	Arg	Leu	Ser	Leu	Ala	Thr	His
	4835					4840					4845			
Pro	Trp	Leu	Ala	Asp	His	Ala	Val	Leu	Gly	Ser	Val	Leu	Leu	Pro
	4850					4855					4860			
Gly	Thr	Ala	Phe	Val	Glu	Leu	Ala	Leu	Arg	Ala	Gly	Asp	Gln	Val
	4865					4870					4875			
Gly	Cys	Asp	Leu	Ile	Asp	Glu	Leu	Thr	Leu	Glu	Ala	Pro	Leu	Val
	4880					4885					4890			
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	4895					4900					4905			
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	4925					4930					4935			
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	4940					4945					4950			
Trp	Pro	Pro	Thr	Gly	Ala	Glu	Ser	Val	Pro	Val	Asp	Gly	Leu	Tyr
	4955					4960					4965			
Glu	Gly	Leu	Ala	Glu	Ser	Gly	Phe	Gly	Tyr	Gly	Pro	Val	Phe	Gln

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Gly	Leu	Arg	Ala	Ala	Trp	Arg	Arg	Asp	Gly	Glu	Tyr	Tyr	Ala	Glu
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Leu	His	Pro	Ala	Leu	Leu	Asp	Ala	Ala	Leu	His	Ala	Leu	Gly	Leu
5015						5020					5025			
Gly	Ser	Thr	Asp	Thr	Glu	Gly	Gly	Glu	Gly	Arg	Leu	Pro	Phe	Ser
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Trp	Ser	Gly	Val	His	Leu	His	Ala	Val	Gly	Ala	Ser	Ala	Leu	Arg
5045						5050					5055			
Val	Arg	Leu	Thr	Thr	Ser	Arg	Ser	Gly	Glu	Val	Ala	Leu	Thr	Ile
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5075						5080					5085			
Leu	Arg	Ala	Val	Ser	Arg	Glu	Gln	Leu	Ser	Thr	Ala	Arg	Asp	Leu
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Thr	Arg	Asp	Ala	Leu	Phe	Arg	Val	Asp	Trp	Thr	Ala	Leu	Pro	Ala
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Gly	Gly	Ala	Val	Gly	Ser	Leu	Asp	Asp	Trp	Met	Leu	Leu	Gly	Ala
5120						5125					5130			
Gly	Ser	Gln	Val	Tyr	Ala	Asp	Leu	Ala	Gly	Leu	Gly	Val	Ala	Val
5135						5140					5145			
Ala	Glu	Gly	Gly	Gly	Ile	Pro	Ala	Ala	Leu	Val	Val	Pro	Val	Ser
5150						5155					5160			
Glu	Pro	Asp	Ala	Glu	Ser	Ala	Ala	Gly	Gly	Val	Ala	Gly	Thr	Val
5165						5170					5175			
His	Ala	Ala	Val	Glu	Arg	Ala	Leu	Ser	Leu	Val	Gln	Glu	Trp	Leu
5180						5185					5190			
Ser	Asp	Glu	Arg	Phe	Ala	Asp	Ala	Arg	Leu	Val	Phe	Leu	Thr	Arg
5195						5200					5205			
Gly	Ala	Val	Ala	Ala	Arg	Ala	Gly	Asp	Thr	Val	Pro	Gly	Leu	Val
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Gln	Ala	Ala	Val	Trp	Gly	Leu	Val	Arg	Ser	Ala	Gln	Ser	Glu	Asn
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Pro	Gly	Arg	Phe	Ala	Leu	Ile	Asp	Val	Asp	Gly	Asp	Gly	Asp	Gly
5240						5245					5250			
Asp	Gly	Glu	Val	Asp	Gly	Asp	Val	Leu	Ser	Ala	Ala	Leu	Ala	Thr
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Asp	Val	Asp	Gly	Thr	Val	Leu	Val	Thr	Gly	Ala	Ser	Gly	Thr	Leu	
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Gly	Gly	Leu	Phe	Ala	Arg	His	Leu	Val	Val	Glu	Arg	Gly	Val	Arg	
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Ala	Glu	Leu	Gly	Ala	Glu	Leu	Thr	Glu	Leu	Gly	Ala	Asp	Val	Arg	
5345						5350					5355				
Trp	Ala	Ala	Cys	Asp	Val	Ala	Asp	Arg	Asp	Ala	Leu	Glu	Ala	Val	
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Leu	Ala	Gly	Ile	Pro	Ala	Glu	Tyr	Pro	Leu	Ser	Gly	Val	Val	His	
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Thr	Ala	Gly	Val	Leu	Asp	Asp	Gly	Val	Val	Ser	Ser	Leu	Thr	Pro	
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Glu	Arg	Leu	Ser	Ala	Val	Leu	Arg	Pro	Lys	Val	Asp	Ala	Ala	Trp	
5405						5410					5415				
Asn	Leu	His	Glu	Leu	Thr	Arg	Gly	Leu	Asp	Leu	Ser	Leu	Phe	Val	
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Leu	Phe	Ser	Ser	Ala	Ala	Gly	Val	Phe	Gly	Gly	Ala	Gly	Gln	Ala	
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Asn	Tyr	Ala	Ala	Ala	Asn	Val	Phe	Leu	Asp	Ala	Leu	Ala	Gln	His	
5450						5455					5460				
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5465						5470					5475				
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5480						5485					5490				
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Leu	Leu	Val	Pro	Leu	Pro	Leu	Asp	Leu	Ala	Ala	Leu	Arg	Val	Gln	
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Gly	Ser	Val	Leu	Arg	Thr	Arg	Leu	Ala	Ala	Met	Pro	Ala	Asp	Glu	

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Arg	Asp	Ala	Ala	Leu	Leu	Asp	Leu	Val	Arg	Ala	Glu	Val	Ala	Ala			
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Val	Leu	Gly	His	Ala	Ser	Thr	Asp	Glu	Val	Pro	Ala	Asp	Arg	Ala			
	5600						5605					5610					
Phe	Lys	Glu	Leu	Gly	Phe	Asp	Ser	Leu	Thr	Ser	Val	Glu	Leu	Arg			
	5615					5620						5625					
Asn	Arg	Leu	Gly	Ala	Thr	Thr	Gly	Glu	Arg	Leu	Ser	Ala	Thr	Leu			
	5630					5635						5640					
Val	Phe	Asp	Tyr	Pro	Thr	Pro	His	Ala	Leu	Ala	Glu	Phe	Leu	Arg			
	5645					5650						5655					
Thr	Glu	Val	Leu	Gly	Leu	Asp	Glu	Pro	Thr	Asp	Thr	Ala	Thr	Thr			
	5660					5665						5670					
Ala	Pro	Thr	His	Leu	Gly	Thr	Ser	Leu	Asp	Asp	Asp	Pro	Ile	Ala			
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Ile	Val	Gly	Met	Ser	Cys	Arg	Tyr	Pro	Gly	Gly	Val	Glu	Thr	Pro			
	5690					5695						5700					
Glu	Asp	Leu	Trp	Arg	Leu	Val	Val	Gly	Gly	Gly	Asp	Ala	Ile	Ser			
	5705					5710						5715					
Glu	Phe	Pro	Gln	Gly	Arg	Gly	Trp	Asp	Leu	Glu	Ser	Leu	Tyr	Asp			
	5720					5725						5730					
Pro	Asp	Pro	Asp	Gly	Lys	Gly	Thr	Ser	Tyr	Thr	Arg	Ser	Gly	Gly			
	5735					5740						5745					
Phe	Leu	His	Asp	Ala	Gly	Arg	Phe	Asp	Pro	Ala	Phe	Phe	Gly	Ile			
	5750					5755						5760					
Ser	Pro	Arg	Glu	Ala	Val	Ala	Met	Asp	Pro	Gln	Gln	Arg	Leu	Leu			
	5765					5770						5775					
Leu	Glu	Thr	Ser	Trp	Glu	Ala	Phe	Glu	Arg	Ala	Gly	Ile	Asp	Pro			
	5780					5785						5790					
Ala	Ser	Met	Arg	Gly	Ser	Arg	Thr	Gly	Val	Phe	Ala	Gly	Ile	Met			
	5795					5800						5805					
Tyr	His	Asp	Tyr	Ala	Thr	Arg	Ile	Thr	Ser	Val	Pro	Asp	Gly	Val			
	5810					5815						5820					
Glu	Gly	Tyr	Leu	Gly	Thr	Gly	Asn	Ser	Gly	Ser	Ile	Ala	Ser	Gly			
	5825					5830						5835					
Arg	Val	Ser	Tyr	Ala	Phe	Gly	Leu	Glu	Gly	Pro	Ala	Val	Thr	Val			
	5840					5845						5850					
Asp	Thr	Ala	Cys	Ser	Ser	Ser	Leu	Val	Ala	Leu	His	Trp	Ala	Ile			
	5855					5860						5865					
Gln	Ala	Leu	Arg	Asn	Gly	Glu	Cys	Thr	Met	Ala	Leu	Ala	Gly	Gly			

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Val Thr	Val Met	Ser Thr	Pro Gly	Thr Phe	Thr Glu	Phe Ser	Arg							
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Gln Arg	Gly Leu	Ala Ala	Asp Gly	Arg Ile	Lys Ser	Phe Ala	Ala							
5900			5905							5910				
Ala Ala	Asp Gly	Thr Ser	Trp Ala	Glu Gly	Ala Gly	Met Leu	Leu							
5915			5920							5925				
Val Glu	Arg Leu	Ser Glu	Ala Arg	Ala Lys	Gly His	Pro Val	Leu							
5930			5935							5940				
Ala Ile	Val Arg	Gly Ser	Ala Ile	Asn Gln	Asp Gly	Ala Ser	Asn							
5945			5950							5955				
Gly Leu	Thr Ala	Pro Asn	Gly Pro	Ser Gln	Gln Arg	Val Ile	Arg							
5960			5965							5970				
Gln Ala	Leu Ala	Gly Ala	Arg Leu	Thr Ser	Asp Gln	Ile Asp	Val							
5975			5980							5985				
Val Glu	Ala His	Gly Thr	Gly Thr	Thr Leu	Gly Asp	Pro Ile	Glu							
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Ala Gln	Ala Leu	Leu Ala	Thr Tyr	Gly Arg	Glu Arg	Glu Ala	Asp							
6005			6010							6015				
Gln Pro	Leu Trp	Leu Gly	Ser Ile	Lys Ser	Asn Met	Gly His	Thr							
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Gln Ala	Ala Ala	Gly Val	Ala Gly	Ile Ile	Lys Met	Ile Met	Ala							
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Ile Arg	His Gly	Val Leu	Pro Lys	Thr Leu	His Val	Asp Glu	Pro							
6050			6055							6060				
Thr Pro	His Val	Asp Trp	Glu Ala	Gly Ala	Val Ser	Leu Leu	Thr							
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Glu Ser	Val Pro	Trp Pro	Glu Thr	Gly Arg	Pro Arg	Arg Ala	Gly							
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Val Ser	Ser Phe	Gly Ile	Ser Gly	Thr Asn	Ala His	Thr Ile	Ile							
6095			6100							6105				
Glu Gln	Ala Pro	Glu Glu	Phe Val	Pro Val	Arg Val	Thr Glu	Ser							
6110			6115							6120				
Gln Thr	Pro Gly	Ala Gly	Ser Arg	Val Leu	Pro Phe	Val Leu	Ser							
6125			6130							6135				
Ala Lys	Ser Ala	Gly Ala	Leu Arg	Gly Gln	Ala Val	Arg Leu	Lys							
6140			6145							6150				
Ala His	Val Glu	Ala Ser	Pro Glu	Val Ser	Gly Ala	Gly Ala	Val							
6155			6160							6165				
Asp Val	Ala Tyr	Ser Leu	Ala Thr	Arg Arg	Ala Val	Phe Asp	His							

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Arg	Ala	Val	Val	Val	Ala	Gly	Asp	Arg	Glu	Glu	Leu	Leu	Arg	Ser	
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Leu	Ala	Ala	Val	Glu	Ser	Glu	Gly	Ala	Ala	Ala	Gly	Val	Thr	Arg	
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Gly	Ala	Val	Gly	Gly	Gly	Lys	Leu	Ala	Phe	Leu	Phe	Thr	Gly	Gln	
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Pro	Val	Phe	Ala	Arg	Ala	Leu	Asp	Ala	Ala	Cys	Ala	Arg	Leu	Glu	
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Gly	Arg	Leu	Met	Gln	Ala	Leu	Pro	Thr	Gly	Gly	Val	Met	Ile	Ala	
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6350						6355						6360			
Val	Ser	Ile	Ala	Ala	Ile	Asn	Gly	Pro	Gln	Ser	Val	Val	Ile	Ala	
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Gly	Asp	Glu	Ala	Asp	Ala	Val	Ala	Ile	Val	Glu	Ser	Phe	Ser	Gly	
6380						6385						6390			
Arg	Lys	Ser	Lys	Arg	Leu	Thr	Val	Ser	His	Ala	Phe	His	Ser	Pro	
6395						6400						6405			
His	Met	Asp	Gly	Met	Leu	Ala	Gly	Phe	Arg	Lys	Val	Ala	Glu	Ser	
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Leu	Ser	Tyr	Glu	Ala	Pro	Arg	Ile	Pro	Val	Val	Ser	Asn	Leu	Thr	
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Gly	Ala	Leu	Val	Thr	Asp	Glu	Met	Gly	Ser	Ala	Asp	Phe	Trp	Val	
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Arg	His	Val	Arg	Glu	Ala	Val	Arg	Phe	Leu	Asp	Gly	Ile	Arg	Thr	
6455						6460						6465			
Leu	Glu	Ala	Ala	Gly	Val	Ala	Thr	Tyr	Val	Glu	Leu	Gly	Pro	Asp	

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Gly Val	Leu Ser	Ala Met	Ala	Gln Asp	Cys Val	Thr	Gly Glu	Gly							
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Ala Ala	Phe Ala	Pro Ala	Leu	Arg Lys	Gly Arg	Pro	Glu Thr	Glu							
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Thr Ile	Thr Thr	Ala Leu	Ala	Leu Ala	His Ala	His	Gly Thr	Ser							
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Val Asp	Trp Glu	Thr Tyr	Phe	Ala Gly	Thr Gly	Ala	Gln Gly	Val							
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Glu Leu	Pro Thr	Tyr Ala	Phe	Gln Arg	Asp Trp	Tyr	Trp Leu	Asn							
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Ser Ala	Val Val	Gln Ala	Gly	Pro Gly	Asp Ala	Ser	Gly Phe	Gly							
6560			6565			6570									
Leu Gly	Ala Thr	Asp His	Pro	Leu Leu	Asp Ala	Thr	Ile Glu	Leu							
6575			6580			6585									
Pro Asp	Ser Asp	Gly Phe	Leu	Phe Thr	Ser Arg	Leu	Ser Leu	Asp							
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Thr Gln	Pro Trp	Leu Ala	Asp	His Ala	Val Leu	Gly	Ser Val	Leu							
6605			6610			6615									
Leu Pro	Gly Thr	Ala Phe	Val	Glu Ile	Ala Val	Arg	Ala Gly	Asp							
6620			6625			6630									
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<400> 37

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35 40 45
Glu Ser Pro Glu Asp Leu Trp Arg Leu Val Ser Glu Glu Thr Asp Ala
50 55 60
Ile Ser Pro Phe Pro Thr Asp Arg Gly Trp Asp Met Gly Arg Leu Phe
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Asp Ala Asp Pro Asp Gly Arg Gly Thr Ser Tyr Val Gln Glu Gly Gly
85 90 95
Phe Leu His Ser Ala Asn Arg Phe Asp Pro Ala Phe Phe Gly Ile Ser
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Pro Arg Glu Ala Val Ala Met Asp Pro Gln Gln Arg Leu Leu Leu Glu
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Ser Leu Ala Leu Ala Gly Gly Val Thr Val Met Ala Thr Pro Gly Thr
225 230 235 240

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 gtcttcgggg ccatgctcca cgaggccgga acgcaggggtg cgtccgggca gttcatggag 10860
 ctgctcatgc aggcgtcgcg gttccggccg tcgttcgcct cggcggccga gctgcgcaag 10920
 gcgccgagcc tcgtgcggtt ctcccgcggt gacaccggtc cgggactggt ctgtttctcc 10980
 tcgatcctgt cgatctcggg cccgcaccag tacgcgcgct tcgcctccgc gttccggggc 11040
 cgccgggagc tgcacgcgct cgggtgcccc ggcttctctgc ggggcgagca gctgccctcg 11100
 gccaccgagc cggatgatca ggcccaggcg gaggccgtgc tccggcacgc ggacggtgcg 11160
 ccgttcgtcc tcctcggcca ctctcggggc ggcatgctcg cccacgcggt ggccgggagg 11220
 ctggagagcg aggggggtctt ccccaggcg ctggtgatga tcgacatcta ctgcacgac 11280
 gacgacgca tcatcggcat ccagcccggc ctctccgagg ggatggacga gcggcaggac 11340
 acctacgtac cggtcgacga caaccggctg ctggcgatgg gcgcgtactt ccggctgttc 11400
 ggaggctgga agcccgaggt ggtgaagacg ccgaccctgc tggtcggggc gggtagcgcg 11460
 ttcttcgact ggaccgggtc cacggacggc gactggcggt cgtactggga cctggaccac 11520
 acggccctgg acgtgccggg caaccacttc accatgatgg aggagcacgc tccgacgacc 11580
 gcacaggccg tcgaggggtg gctggacacg accggctga 11619

<210> 39
 <211> 338
 <212> PRT
 <213> *Streptomyces aizunensis*

<400> 39

Met Thr Thr Ser Asp Ser Arg Ser Asp Ser Arg Ser Gly Ser Asp Ser
 1 5 10 15
 Gly Phe Asn Ser Gly Phe Asp Ser Glu Gln Thr Pro Ser Thr Glu Thr
 20 25 30
 Ala Ile Val Phe Pro Gly Met Gly Pro Ser Ser Phe Ala Glu Val Gly
 35 40 45
 Lys Phe Leu Leu Leu Asp Pro Tyr Ala Arg Arg Arg Leu Ala Glu Ala
 50 55 60
 Asp Glu Ala Leu Gly Tyr Ser Val Phe Asp Arg Phe Arg Thr Ser Glu
 65 70 75 80
 Asp Asp Tyr Ser Val Tyr Ser Gln Ile Ala Phe Leu Val Asn Ser Met
 85 90 95
 Ala Met Ala Asp Arg Ala Val Asp Ala Leu Gly Ile Ser Pro Thr Val
 100 105 110

Cys Ala Gly Pro Ser Phe Gly Gln Lys Ala Ala Ser Ala Phe Val Gly
 115 120 125
 Ser Leu Pro Phe Ala Asp Val Val Arg Leu Thr Ala Glu Leu Ala Arg
 130 135 140
 Cys Glu Glu Glu Tyr Phe Ala Asp Ala Tyr Gln Asp Val Val Thr His
 145 150 155 160
 Cys Phe Val Arg Thr Pro Gln Asp Arg Leu Asp Glu Ile Leu Ala Gly
 165 170 175
 Phe Asp Asp Arg Gly Ala Trp Tyr Asp Ile Ser Gly Arg Leu Asp Ala
 180 185 190
 Ala Phe His Met Val Ser Val Gln Glu Lys Glu Leu Asp Gly Leu Lys
 195 200 205
 Ala Gly Ile Ser Ala Val Gly Gly Tyr Ser Met Tyr Ser Met Arg Pro
 210 215 220
 Pro Val His Ala Ala Ala Phe Ser Ala Leu Arg Arg Lys Ala Glu Glu
 225 230 235 240
 Glu Val Phe Ala Ala Tyr Glu Leu Ala Asp Pro Thr Leu Pro Val Val
 245 250 255
 Asn Asp Gln Asp Gly Gly Val Val Arg Asp Ala Ala Gly Met Arg Thr
 260 265 270
 Met Met Leu Asp Thr Phe Asp Arg Pro Val His Trp Pro Gly Val Val
 275 280 285
 Glu Ser Leu Lys Gly Leu Gly Val Gly Thr Val Cys Val Thr Gly Pro
 290 295 300
 Asp Asn Leu Phe His Arg Leu Asp Leu Thr Lys Asp Ser Phe Glu Val
 305 310 315 320
 Val Thr Val Gly Leu Pro Lys Lys Arg Ser Arg Glu Arg Glu Lys Arg
 325 330 335

Val Ala

<210> 40
 <211> 1017
 <212> DNA
 <213> Streptomyces aizunensis

 <400> .40
 atgaccactt ctgattcccg ttccgactcc cgttccggct ccgactccgg cttcaactcc 60
 ggcttcgact ccgagcagac tcctcgacc gagacggcga tcgtctttcc cggtatgggc 120
 ccctcgtcct tcgcgagggt cggaaagttc ctgctgctcg acccttacgc gcgccggcgc 180
 ctcgcgaggag cagacgaggc gctcggatat tcggtgttcg accgtttccg cacctccgag 240
 gacgactact cggctctattc gcagatcgcc ttcttggtga attc gatggc tatggccgac 300

cggggcgggtgg acgcgctcgg catctctccc accgtctgcg cgggcccagag tttcggccag 360
 aaggccgcct cgcgtttcgt cgggtcgtg cccttcgctg acgtcgtccg gtcaccgcg 420
 gagctggccc gctgcgagga ggagtacttc gccgacgcgt accaggacgt cgtcacgcac 480
 tgcttcgtcc gcaccccgca ggaccggctg gacgagatcc tggccggctt cgacgaccgc 540
 ggtgcctggt acgacatctc cgggcccgtg gacgccgctt tccacatggt gtcggtacag 600
 gagaaggagc tggacgggct gaaggggggc atcagcgcgg tcggcggcta ctccatgtac 660
 tcgatgcgcc cgcccgtgca cggggcggcc ttctcggcgc tgcgccgcaa ggcggaggaa 720
 gaggtcttcg ccgcgtacga actggccgac cccaccctgc ccgtggtcaa cgaccaggac 780
 ggcggggctc tccgggacgc cgccgggatg cgcacgatga tgctggacac cttcgaccgg 840
 cccgtccact ggcccggcgt ggtggagtcc ctcaaggggc tcggcgtggg cacggtgtgc 900
 gtgaccgggc ccgacaacct cttccaccgc ctcgacctca ccaaggacag cttcgaggtc 960
 gtgacgggtg ggctgccgaa gaagcgtcc cgcgagcgtg agaagcgcgt cgctga 1017

<210> 41
 <211> 283
 <212> PRT
 <213> Streptomyces aizunensis

<400> 41

Met Thr Ala Thr Leu Thr Ala Pro Asp Pro Val Thr Asp Phe Pro Ala
 1 5 10 15
 Glu Leu Arg Pro Ala Arg Thr Asp Val Arg Thr Ala Thr Arg Thr Phe
 20 25 30
 Phe Phe Ile Leu Trp Arg Asp Ile Phe Val Thr Gly Arg Glu Leu Gly
 35 40 45
 Pro Phe Leu Ala Gln Val Leu Val Glu Pro Phe Phe Ile Leu Phe Val
 50 55 60
 Phe Gly Lys Val Leu Gly Glu Leu Gly Tyr Thr Gly Gly Gly Phe Gln
 65 70 75 80
 Gln Ile Leu Leu Pro Gly Val Val Ala Leu Asn Ser Phe Leu Val Ser
 85 90 95
 Leu Gln Asn Thr Ala Leu Pro Leu Val Ile Asp Phe Ser Trp Thr Lys
 100 105 110
 Glu Ile Glu Asp Arg Leu Leu Ala Pro Ile Pro Thr Ser Leu Val Ala
 115 120 125
 Val Glu Lys Leu Val Phe Gly Ala Leu Arg Gly Ile Ile Ala Ser Leu
 130 135 140

Val Met Ile Pro Val Gly Phe Leu Ile Leu Asp Asp Val Ser Trp Pro
 145 150 155 160
 Met Asp Ser Phe Leu Pro Thr Leu Gly Val Leu Leu Thr Gly Ala Leu
 165 170 175
 Ala Gly Ser Thr Val Gly Leu Thr Ile Gly Thr Leu Ala Pro Pro Arg
 180 185 190
 His Ile Ser Val Ile Phe Ala Val Thr Leu Thr Pro Leu Met Phe Thr
 195 200 205
 Gly Cys Thr Gln Phe Pro Trp His Ser Leu Ala Asp Ile Arg Trp Phe
 210 215 220
 Gln Val Leu Cys Ala Ile Asn Pro Leu Thr Tyr Val Ser Glu Gly Ile
 225 230 235 240
 Arg Ala Leu Leu Leu Pro Pro Gly Gly Pro Gly Ser Ile Pro Leu Trp
 245 250 255
 Ile Asp Leu Leu Ala Leu Ser Gly Ala Ile Val Val Phe Gly Leu Ile
 260 265 270
 Gly Ile Lys Gly Phe His Arg Arg Ala Gln Asp
 275 280

<210> 42
 <211> 852
 <212> DNA
 <213> Streptomyces aizunensis

<400> 42
 atgacggcca ccctgaccgc acccgaccgc gtcaccgact tcccggccga actgcggccc 60
 gcgcgcaccg acgtgcgcac cgcgaccgc acgttcttct tcatcctgtg gcgggacatc 120
 ttcgtcaccg gccgcgaact gggcccgttc ctcgcccagg tgctcgtgga accgttcttc 180
 atcctgttcg tcttcggcaa ggtcctcggc gaactcgggt acaccggcgg cgggttccag 240
 cagatcctgc tcccgggcgt ggtcgcgctc aacagcttcc tggtcagcct gcagaacacc 300
 gcgctgcccc tggatcatga cttctcctgg accaaggaga tcgaggaccg gctcctcgcg 360
 cccatcccca ccagcctggt ggccgctcag aagctggtct tcggggcgct gcgcggcatc 420
 atgcctcac tggatgatgat ccccgtcggc ttctgatcc tcgacgacgt gtcttgccg 480
 atggacagct tctgcccac gctgggctg ctgctgacgg gcgcgctggc gggcagcagc 540
 gtgggtctga ccatcggcac gctggccccg ccgcggcaca tcagcgtcat cttcgccgtg 600
 acgctgacce cgctgatggt caccggctgc acccagttcc cctggcacag cctggcggac 660
 atccgctggt tccaggtgct gtgcgccatc aaccgctga cctacgtcag cgaggggatc 720
 cgcgcctcgc tgctgccgcc gggcgcccc ggctcgatc cgctgtggat cgatctgctc 780
 gccctgagcg gggcgatcgt ggtcttcggg ctgatcggca tcaaggggtt ccaccgcagg 840

<210> 43

<211> 329

<212> PRT

<213> Streptomyces aizunensis

<400> 43

Val Asp Ser Ala Val Val Val Asp Gly Leu Val Lys Lys Tyr Arg Ser
 1 5 10 15
 Arg Asp Arg Pro Ala Val Asp Asp Leu Ser Phe Ser Val Arg Arg Gly
 20 25 30
 Glu Val Phe Gly Phe Leu Gly Pro Asn Gly Ala Gly Lys Thr Thr Thr
 35 40 45
 Ile Gly Ile Leu Thr Thr Arg Val Ala Pro Thr Ala Gly Arg Ala Phe
 50 55 60
 Val Gln Gly Val Asp Val Val Ala His Pro Ala Gln Ala Arg Arg Ala
 65 70 75 80
 Phe Ala Val Val Pro Gln Arg Asn Asn Leu Asp Arg Ser Leu Thr Leu
 85 90 95
 Arg Gln Asn Leu Thr Phe His Ala Gly Tyr His Gly Met Ser Arg Ser
 100 105 110
 Glu Arg Gly Arg Leu Ala Asp Glu Cys Leu Glu Trp Val Gly Leu Ala
 115 120 125
 Asp Arg Gly Lys Ala Arg Gly Asp Glu Leu Ser Gly Gly Gln Ala Gln
 130 135 140
 Arg Val Met Ile Ala Arg Ala Leu Met His Arg Pro Asp Val Leu Phe
 145 150 155 160
 Leu Asp Glu Pro Ala Thr Gly Leu Asp Pro Gln Ala Arg Leu Phe Ile
 165 170 175
 His Glu Arg Val Ala Glu Leu Ser Lys Arg Gly Val Thr Thr Val Leu
 180 185 190
 Thr Thr His Asp Met Asp Glu Ala Ala Lys Leu Cys Asp Arg Val Gly
 195 200 205
 Ile Val Asp His Gly Arg Leu Leu Ala Leu Asp Thr Pro Gln Ala Leu
 210 215 220
 Thr Arg Ser Leu Ser Ser Thr Ala Leu Thr Leu Thr Val Gln Pro Ala
 225 230 235 240
 Gly His Asp Ala Glu Ser Val Val Arg Leu Leu Glu Arg Ile Glu Thr
 245 250 255
 Val Glu Arg Val Glu Leu Ala His Gln Glu His Ala Lys Glu Gln Gly

<400> 45

Val Ser Ala Gly Phe Gly Val Glu Pro Gly Ser Leu Arg Trp Met Val
1 5 10 15
Ile Gly Ala Thr Gly Met Leu Gly Gly Glu Val Ala Ala Gln Leu Thr
20 25 30
Ala Arg Gly Ala Asp Pro Val Gly Val Gly Ser Ala Asp Leu Asp Leu
35 40 45
Thr Asp Pro Gln Ala Val Ala Ala Ala Val Ala Asp Gly Gly Pro Asp
50 55 60
Val Val Val Asn Cys Ala Ala Trp Thr Ala Val Asp Leu Ala Glu Thr
65 70 75 80
Glu Glu Glu Ala Ala Leu Ala Val Asn Gly Thr Gly Ala Gly His Leu
85 90 95
Ala Arg Ala Cys Ala Ala Thr Gly Ser Arg Leu Leu His Val Ser Thr
100 105 110
Asp Tyr Val Phe Arg Gly Ala Pro Ala Asp Ala Gly His Pro Tyr Ala
115 120 125
Glu Asp Ala Glu Pro Asp Pro Ala Thr Ala Tyr Gly Arg Thr Lys Leu
130 135 140
Val Gly Glu Arg Ala Val Leu Ala Glu Leu Pro Ala Thr Ala Ala Val
145 150 155 160
Val Arg Thr Ser Trp Leu Tyr Gly Arg Asp Asn Gly Gly Phe Val His
165 170 175
Thr Met Ala Arg Leu Ala Arg Glu Pro Gly Arg Thr Val Asp Val Val
180 185 190
Asp Asp Gln His Gly Gln Pro Ser Trp Thr Pro Asp Val Ala Ala Arg
195 200 205
Ile Ile Glu Leu Ala Ala Leu Pro Ala Asp Arg Ala His Gly Val Phe
210 215 220
His Ala Thr Gly Gly Gly Arg Thr Thr Trp Tyr Asp Leu Ala Arg Glu
225 230 235 240
Val Phe Arg Leu Thr Gly Gln Asp Pro Asp Arg Val Arg Arg Ile Asp
245 250 255
Ser Ser Gly Leu Arg Arg Ala Ala Val Arg Pro Ala Trp Ser Val Leu
260 265 270
Gly His Asp Arg Trp Ala Ala Thr Gly Leu Ala Pro Met Arg His Trp
275 280 285
Arg Thr Ala Leu Ala Asp Ala Leu Met Gly Asp Pro Val Gly Asp Arg
290 295 300
Leu Pro Glu Ser Val Asn Ser Pro Gly Pro Lys Gly Cys

305

310

315

<210> 46
<211> 954
<212> DNA
<213> Streptomyces aizunensis

<400> 46
gtgtccgcgg gctttgggggt ggaacccggg tcgctgcggt ggatggtgat cggcgcgacg 60
ggcatgctcg gcggcgaaagt ggccgcccag ctcacggccc ggggcgccga cccggtgggg 120
gtcggcagtg cggatctgga cctcaccgac cgcagggcgg tcgccgcggc cgtggccgac 180
ggcggccccc atgtcgtcgt caactgcgcc gcctggaccg ccgtggacct ggccgagacc 240
gaggaggagg cggccctcgc cgtcaacggg acggggagcgg gccacctcgc ccgggcctgc 300
gccgccaccg gcagccggct cctccacgtc tccaccgact acgtcttccg aggtgccccg 360
gccgatgccg gacacccta tgcggaggac gccgaacccg accccgccac cgcgtacgga 420
cgcaccaagc tcgtcggcga gcgcgccgtc ctcgccgaac tccccgccac cgctgccgtg 480
gtgcgcacgt cctggctgta cggacgcgac aacggcggct tcgtgcacac catggcccgg 540
ctcgcgcgcg agccgggacg caccgtggac gtggtcgacg accagcacgg acagccgagc 600
tggacccccg atgtcgcggc ccggatcatc gagctcgccg ccctgcccgc cgaccgggcg 660
cacggcgtct tccatgccac cggcgggggc cgcaccacct ggtacgacct ggcccgcgag 720
gtgttccggc tgaccggcca ggaccggac cgggtccggc gcatcgacag ctccgggctg 780
cgacggggcg cggctccgcc gccatggagc gttctggggc atgaccgctg ggccgccacg 840
gggctcgccc cgatgcgtca ctggcgcacg gccctcgcgg acgccctcat gggcgacccc 900
gtgggcgacc gacttcccga gagtgtgaac tccccggcc cgaaaggctg ttga 954

<210> 47
<211> 204
<212> PRT
<213> Streptomyces aizunensis

<400> 47
Val Lys Ser Leu Ser Ile Glu Gly Ala Trp Leu Tyr Glu Pro Leu Leu
1 5 10 15
His Asp Asp Glu Arg Gly Thr Phe Leu Glu Val Phe Gln Ser Gln Ala
20 25 30
Phe Glu Leu Ala Thr Gly Arg Arg Leu Glu Leu Ala Gln Val Asn Cys
35 40 45
Ser Val Ser Arg Arg Gly Val Val Arg Gly Val His Phe Ala Asp Leu
50 55 60

Pro Pro Gly Gln Ala Lys Tyr Val Thr Cys Val Arg Gly Ala Val Arg
 65 70 75 80
 Asp Val Ile Val Asp Leu Arg Thr Gly Ser Pro Thr Tyr Arg Ala Trp
 85 90 95
 Glu Ala Val Glu Leu Asp Asp Arg Asp Arg Arg Ala Val Phe Leu Ser
 100 105 110
 Glu Gly Leu Gly His Ala Phe Gln Ala Ile Thr Asp Asp Ala Thr Val
 115 120 125
 Val Tyr Leu Thr Thr Ser Gly Tyr Ala Pro Gly Arg Glu His Gly Val
 130 135 140
 His Pro Leu Asp Pro Glu Leu Gly Ile Thr Trp Leu Pro Gly Met Glu
 145 150 155 160
 Pro Leu Leu Ser Pro Lys Asp Ala Val Ala Pro Thr Leu Ala Val Ala
 165 170 175
 Glu Ala Gln Gly Leu Leu Pro Ala Tyr Glu Asp Cys Val Arg Tyr Val
 180 185 190
 Ser Ser Leu Ala Thr Pro Leu Ser Glu Glu Thr Pro
 195 200

<210> 48
 <211> 615
 <212> DNA
 <213> Streptomyces aizunensis

<400> 48
 gtgaaatccc tgtcgataga gggcgctgg ctctatgagc cgctgctcca cgacgatgag 60
 cgcggcacgt tcttgaggt gttccagagc caggccttcg agctggccac cggccgcccgc 120
 ctcgaactgg cccaggtcaa ctgctccgtg tcccgccgcg gcgtcgtgcg cggcgtccac 180
 ttcgccgact taccgcccgg ccaggccaag tacgtcacct gcgtacgagg cgcggtgcmc 240
 gatgtgatcg tggacctgcm caccggctcm cccacctacc gcgctgggga ggccgctcga 300
 ctcgacgacc gcgaccggcm ggcggtcttc ctctccgagg gcctcggcca cgccttccag 360
 gcgatcaccg acgacgccac cgtcgtctac ctgaccacct cgggctacgc ccccggccgt 420
 gagcacggcm tccaccgct cgaccggag ctgggcatca cctggcttcc cggcatggaa 480
 ccgctgctgt ccccgaagga cgctgtcggc cccaccctcm cggtgggcga ggcccagggt 540
 ctgctgcccg cgtacgagga ctgcgtacgg tacgtgtcct cgctcggcac accactcagc 600
 gaggagacc cgtga 615

<210> 49
 <211> 328
 <212> PRT
 <213> Streptomyces aizunensis

<400> 49

Val Ala Asn Lys Pro Ile Leu Phe Tyr Val Leu Glu Gly Ile Ala Asp
1 5 10 15
Ala Gly Val Thr Asp Val Gly Ile Ile Val Gly Asp Thr Ala Asp Glu
20 25 30
Ile Arg Ala Ala Val Gly Asp Gly Ser Arg Phe Gly Ile Ser Val Thr
35 40 45
Tyr Ile Pro Gln His Gln Pro Leu Gly Leu Ala His Ala Val Arg Ile
50 55 60
Ala Arg Asp Trp Leu Gly Glu Asp Asp Phe Val Met Tyr Leu Gly Asp
65 70 75 80
Asn Phe Leu Leu Gly Gly Ile Ser Glu Gln Leu Glu Glu Phe Arg Thr
85 90 95
Arg Arg Pro Ala Ala Gln Ile Met Leu Thr Arg Val Pro Asp Pro Ser
100 105 110
Ala Phe Gly Val Val Thr Leu Asp Glu Ala Gly Arg Val Thr Gly Leu
115 120 125
Glu Glu Lys Pro Lys Phe Pro Lys Ser Asp Leu Ala Leu Val Gly Val
130 135 140
Tyr Phe Phe Thr Ala Ala Val His Asp Ala Val Asp Ala Ile Gln Pro
145 150 155 160
Ser Ala Arg Gly Glu Leu Glu Ile Thr Glu Ala Leu Gln Trp Leu Leu
165 170 175
Asp Lys Gly Leu Gly Ile Ala Ser Ser Thr Val Asn Gly Tyr Trp Lys
180 185 190
Asp Thr Gly Asn Ala Thr Asp Met Leu Glu Val Asn Arg Thr Val Leu
195 200 205
Asp Arg Leu Thr Pro Tyr Cys Asp Gly Ser Val Asp Gly Glu Ser Glu
210 215 220
Leu Val Gly Arg Val Val Val Glu Asp Gly Ala Val Ile Thr Arg Ser
225 230 235 240
Arg Ile Val Gly Pro Ala Ile Ile Gly Arg Gly Thr Arg Val Glu Gly
245 250 255
Ser Tyr Ile Gly Pro Phe Thr Ser Val Gly Ala Asp Cys Val Val Val
260 265 270
Asp Ser Glu Ile Glu Tyr Ser Ile Val Leu Ala Gly Ala Ala Ile Asp
275 280 285
Gly Val Gly Arg Ile Glu Ala Ser Met Ile Gly Arg Gln Ala Gln Val
290 295 300

Thr Pro Ala Pro Arg Thr Pro Gln Ala His Arg Leu Ile Leu Gly Asp
 305 310 315 320
 His Ser Lys Val Gln Ile Arg Ser
 325

<210> 50
 <211> 987
 <212> DNA
 <213> Streptomyces aizunensis

<400> 50
 gtggccaaca aaccatcct cttctacgtc ctggaagggga tgcgccgacgc gggcgtcacc 60
 gatgtcggca tcatcgtcgg cgacacggcc gacgagatca gggcggccgt cggcgacggc 120
 tcccgcttcg gcatcagcgt cacctacatc ccgcagcacc agccgctcgg cctggcccac 180
 gccgtgcgca tgcacggga ctggctcggc gaggacgact tcgtgatgta cctggggcgc 240
 aacttctgc tggcggggat cagcgagcag ctggaggagt tccgcacccg gcggcccgcc 300
 gcgcagatca tgctacccg ggtccccgat ccctccgctt tcggcgtcgt caccctcgac 360
 gaggcggggc gggtcaccgg cctggaggag aagccgaagt tcccaagag cgatctcgcg 420
 ctggctcggc tgtacttctt caccgccgcc gtgcacgacg ccgtggacgc catccagccc 480
 tccgcccgcg gcgagctgga gatcaccgag gccctccagt ggctcctcga caagggcctc 540
 ggcacgcgt cctccacggg caacggctac tggaaggaca ccggcaacgc caccgacatg 600
 ctggagggtca accgcacggg gctcgacagg ctgaccccgt actgcgacgg ctccgctcgc 660
 ggcgagagcg aactggtcgg ccgggtcgtc gtcgaggacg gcgcggtgat caccgctcc 720
 cggatcgtgg gccccgcat catcggccgc ggcacccgcg tcgagggctc ctacatcggc 780
 ccgttcacct ccgtcggggc ggactgctg gtcgctcgaca gcgagatcga gtactccatc 840
 gtgctggccg gcgcggccat cgacggcgtc ggccggatcg aggcgtccat gatcggccgt 900
 caggcgcagg tcacccccgc gccccgcacg ccccaggccc accgtctgat cctcggcgac 960
 cacagcaagg tgcagatccg ttcatga 987

<210> 51
 <211> 328
 <212> PRT
 <213> Streptomyces aizunensis

<400> 51

Met Asn Ile Leu Ile Thr Gly Ala Ala Gly Phe Ile Gly Ser His Leu
 1 5 10 15
 Val Arg Thr Ile Leu Gly Pro Asp Lys Pro Leu Gly Asp Asp Val Arg
 20 25 30

Val Thr Val Leu Asp Ala Leu Thr Tyr Ala Gly Asn Arg Ala Ser Leu
 35 40 45
 Ala Ala Val Glu Asp Glu Pro Gly Phe Thr Phe Val His Gly Asp Ile
 50 55 60
 Thr Asp Ala Leu Leu Val Asp Arg Leu Val Ala Ala His Asp Ala Val
 65 70 75 80
 Val His Leu Ala Ala Glu Ser His Val Asp Arg Ser Ile Trp Arg Ala
 85 90 95
 Asp Ala Phe Val Arg Thr Asn Val Leu Gly Thr His Thr Leu Leu Glu
 100 105 110
 Ala Ala Leu Arg His Gly Thr Gly Pro Phe Val His Val Ser Thr Asp
 115 120 125
 Glu Val Tyr Gly Ser Val Pro Val Gly Ser Ser Val Glu Ser Asp Pro
 130 135 140
 Leu Thr Pro Ser Ser Pro Tyr Ser Ala Ser Lys Ala Ser Ser Asp Leu
 145 150 155 160
 Leu Ala Leu Ala Tyr His His Thr His Gly Leu Asp Val Arg Val Thr
 165 170 175
 Arg Cys Ser Asn Asn Tyr Gly Pro Tyr Gln His Pro Glu Lys Val Ile
 180 185 190
 Pro Leu Phe Val Thr Arg Leu Leu Ser Gly Ala Ala Val Pro Leu Tyr
 195 200 205
 Gly Asp Gly Gly Asn Val Arg Asp Trp Leu His Val Asp Asp His Cys
 210 215 220
 Arg Ala Leu Leu Ala Val Leu Thr Asp Gly Arg Ala Gly His Thr Tyr
 225 230 235 240
 Asn Ile Gly Gly Gly Thr Glu Leu Thr Asn Lys Glu Leu Thr Gly Leu
 245 250 255
 Leu Leu Asp Ala Cys Gly Ala Gly Trp Asp Arg Val Glu His Val Thr
 260 265 270
 Asp Arg Lys Gly His Asp Arg Arg Tyr Ser Val Asp Trp Thr Lys Ile
 275 280 285
 Arg Thr Glu Leu Gly Tyr Thr Pro Ala His Asp Phe Ala Glu Gly Leu
 290 295 300
 Ala Glu Thr Val Ala Trp Tyr Arg Thr Asn Arg Pro Phe Trp Ala Ala
 305 310 315 320
 Pro Gly Ala Glu Leu Gln Gly Ala
 325

<210> 52
 <211> 987
 <212> DNA

<213> Streptomyces aizunensis

<400> 52

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atgaacatcc tgatcacggg agcgggccggc ttcacatggct cccacctcgt acgcacgatc      60
ctgggcccgg acaaaccgct cggcgacgac gtccgcgtca ccgtcctgga cgcgctgacc      120
tacgcgggca accgcgcctc cctcgccgcc gtcgaggacg aaccgggctt caccttcgtg      180
cacggcgaca tcaccgacgc gctgctgggtg gaccgcctgg tggcggccca cgacgccgtg      240
gtgcacactgg ccgccgagtc gcacgtcgac cgttcgatct ggcggggccga cgcgttcgta      300
cgcaccaatg tgctcggcac ccacaccctg ctggaggccg cgctgaggca cggcaccggc      360
ccgttcgtgc acgtgtcgac cgacgaggtg tacggctcgg tcccggtcgg ctcgtccgtc      420
gagagcgacc cgctgacgcc cagctcgccc tactccgcgt ccaaggcgtc cagtgatctg      480
ctggccctgg cctaccacca caccacgga ctcgacgtgc gggtgacgcg ctgctccaac      540
aactacgggc cctaaccagca cccggagaag gtgatcccgc tcttcgtcac cgggctgctc      600
agtggcgccg ccgtcccgtc ctacggcgac ggcgggaacg tacgcgactg gctgcacgtc      660
gacgaccact gccgcgctct gctggccgtc ctcaccgacg ggcgcgcggg gcacacgtac      720
aacatcggcg gcggcaccga gtcaccaac aaggagctga ccggcctgct gctggacgcc      780
tgcggcgccc gatgggaccg ggtcgagcac gtcaccgacc gcaagggcca cgaccgccgg      840
tactccgtcg actggacgaa gatccgcacc gagctgggct acacccccgc gcacgacttc      900
gccgagggcc tcgccgagac cgtcgcctgg tacagaacca accgccggtt ctgggcagcg      960
cccggggcgg agcttcaggg cgcataga                                         987
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<210> 53

<211> 214

<212> PRT

<213> Streptomyces aizunensis

<400> 53

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Met Thr His Glu Gly Thr Arg His Ser Thr Arg Glu Thr Thr Pro Asp
1          5          10          15
Asp Val Ser Leu Ile Gln Ile Arg Gln Pro Ala Ile Pro Ser Ser Tyr
20          25          30
Arg Met Ile Cys Phe Pro Ser Ser Arg Asn Ser Ser Ile Cys Tyr Leu
35          40          45
Ala Met Ser Glu Leu Leu Leu Pro Thr Val Glu Leu Leu Ile Val Gln
50          55          60
Tyr Pro Ala Leu Thr Ser Glu Glu Glu His Ser Ala Glu Glu Asp Ala
65          70          75          80
```

Ala Leu Ala Asp Lys Ile Phe Glu Ala Val Arg Gly Trp Ala Asp Arg
85 90 95

Pro Leu Ala Leu Phe Gly His Arg Leu Gly Ala Glu Leu Ala Tyr Ala
100 105 110

Val Ala Gln Arg Leu Glu Arg Glu Thr Asp Ala Ala Pro Leu Thr Leu
115 120 125

Phe Val Ser Gly Arg Thr Gly Pro Gly His Arg Gly Ser Leu Gly Pro
130 135 140

Pro Ala Leu Asn Cys Arg Val Val Ala Leu Ala Gly Tyr His Asp Pro
145 150 155 160

Arg Ala Pro Leu Ala Gly Val Arg Ala Trp Arg Arg Cys Thr Ala Gly
165 170 175

Arg Phe Asp Leu Glu Val Phe Pro Gly Thr Arg Gly Tyr Leu Asp Ser
180 185 190

His Arg Arg Glu Val Val Asn Leu Val His Asp Gln Leu Ile Ser Leu
195 200 205

Arg Gly Pro Glu Pro Asp
210

<210> 54
<211> 645
<212> DNA
<213> Streptomyces aizunensis

<400> 54
atgacgcatg agggcaccgg gcaactccacg agggagacca cccccgacga cgtcagcctg 60
atccagatcc ggcagccggc gatcccgagc agctaccgca tgatctgttt ccccagttcg 120
cggaactcct cgatctgcta tctggccatg tcggaactgc tgctgcccac cgtggaactg 180
ctcatcgtcc agtaccggc cctgacctcc gaggaggagc attcggccga ggaggacgcg 240
gcgctcgccg acaagatctt cgaagcggtc cggggctggg ccgaccgcc gctcgcctc 300
ttcgggcacc gcctcgggtc cgaactcgcc tacgcggtcg cccagcggct ggaacgggag 360
accgacgcg caccctgac cctgttcgtc tccggacgca cgggaccggg ccaccgcggc 420
agcctcggcc cgcccgcgct caactgccgg gtcgtcgccc tggccgggta ccacgacccc 480
cgcgaccccc tggccggggg acgggcctgg cggcgctgca cggcgggacg gttcgacctg 540
gaggtctttc cgggacccg cggctacctc gactcgcacc gccgcgaggt cgtcaacctc 600
gtgcacgacc agctgatttc gctccgcgga cgggagcccc actga 645

<210> 55
<211> 470
<212> PRT
<213> Streptomyces aizunensis

<400> 55

Val Arg Pro Met Thr Ala Lys Ile Phe Ala Val Asp Ser Val Arg Pro
1 5 10 15
Ile Asp Glu Phe Glu Gln Asp Ala Leu Arg Val Ala Asp Val Ile Arg
20 25 30
Glu Arg Gly Val Cys Leu Gly Asp Arg Val Met Leu Lys Ala Gly Asn
35 40 45
Ser Ala Ser Tyr Val Cys Val Leu Tyr Ala Leu Met His Ile Gly Ala
50 55 60
Ser Ile Val Leu Val Asp Gln Gln Glu His Lys Glu Glu Thr Arg Arg
65 70 75 80
Ile Ala Leu Arg Thr Gly Val Lys Val Thr Phe Val Asp Asp Glu Thr
85 90 95
Pro Ile Asp Gln Asp Ala Asp Pro Ile His Leu Tyr Glu Leu Met Val
100 105 110
Ala Thr Gln Asn Arg Pro Pro Met Asp Ser Ala Leu Ser Phe Asp Ala
115 120 125
Trp Gly Glu Leu Ser Asp Gly Leu Ile Met Trp Thr Ser Gly Ser Thr
130 135 140
Gly Ser Pro Lys Gly Val Val Lys Ser Gly Gly Lys Phe Leu Ala Asn
145 150 155 160
Leu Arg Arg Asn Ala His Gln Val Gly His Arg Pro Asp Asp Val Leu
165 170 175
Met Pro Leu Leu Pro Phe Ala His Gln Tyr Gly Leu Ser Met Val Leu
180 185 190
Ile Ala Trp Leu Thr Arg Cys Ser Leu Val Ile Ala Pro Tyr Arg Arg
195 200 205
Leu Asp Arg Ala Leu Arg Met Ala Arg Asp Ser Gly Thr Thr Val Ile
210 215 220
Asp Ala Thr Pro Ser Ser Tyr Arg Ser Ile Leu Gly Leu Val Thr Arg
225 230 235 240
Lys Pro Ala Leu Arg Ala His Leu Ala Gly Thr Arg Met Phe Cys Val
245 250 255
Gly Ala Ala Pro Leu Asp Ala Pro Leu Val Glu Ser Tyr Val Gln Glu
260 265 270
Phe Gly Leu Pro Leu Leu Asp Ser Tyr Gly Ser Thr Glu Leu Asn Asn
275 280 285
Ile Ala Phe Ala Thr Leu Asp Asn Pro Val Ser Cys Gly Arg Ala Met
290 295 300

Glu Gly Ile Gly Leu Arg Ile Val Asp Glu Asp Gly Arg Glu Val Ala
 305 310 315 320
 Ala Gly Gln Pro Gly Glu Ile Glu Val Asp Thr Pro Asp Ala Leu Glu
 325 330 335
 Gly Gln Ile Ala Glu Asp Gly Ser Ile Ile Pro Ala Pro Thr Gly Trp
 340 345 350
 Gln Arg Thr Gly Asp Leu Gly His Leu Asp Ala Asp Gly Asn Leu Tyr
 355 360 365
 Val Leu Gly Arg Lys Phe Ala Val His Arg Met Gly Tyr Thr Leu Tyr
 370 375 380
 Pro Glu Leu Ile Glu Arg Lys Val Ala Ala Glu Gly Cys Pro Thr Arg
 385 390 395 400
 Ile Val Pro Leu Pro Asp Glu Leu Arg Gly Ser Gln Leu Val Phe Phe
 405 410 415
 Val Glu Asp Asp Glu Gln Arg Asp Ala Gly Tyr Trp Arg Glu Arg Leu
 420 425 430
 Cys Gly Leu Leu Pro Ala Phe Glu Gln Pro Asn Lys Val Val Val Leu
 435 440 445
 Glu Gln Phe Pro Leu Asn Arg Asn Gly Lys Pro Asp Lys Lys Glu Leu
 450 455 460
 Thr Arg Met Ala Ala Glu
 465 470

<210> 56
 <211> 1413
 <212> DNA
 <213> Streptomyces aizunensis

<400> 56
 gtgcgaccga tgaccgcaa gatctttgca gtcgactcgg tacgacccat agacgagttc 60
 gagcaggacg ccctccgct cgccgatgtg atccgcaac gcggagtctg tctcggcgac 120
 cgggtcatgc tgaaggccg caactcggcg agctacgtct gtgtgctgta cgcgctgatg 180
 cacatcggcg cctcgatcgt cctcgtcgac cagcaggaac acaaggagga gaccgcccgc 240
 atcgcgctgc gcaccggcgt caaggtcacc ttcgctcgac acgagacccc gatcgaccag 300
 gagcccgacc ccatccacct gtacgaactc atggtggcca cccagaaccg tccgcccattg 360
 gacagcgcgc tgctgttcga cgctcggggc gagctgtccg acggcctcat catgtggacc 420
 tcgggctcca ccggtatgcc caagggcgtg gtgaagtccg gcgggaagtt cctggccaac 480
 ctccggcgca acgcccacca ggtcggccac cgtcccgcag acgtcctgat gccgctgctg 540
 ccgttcgccc accagtacgg cctgtcgatg gtcctcatcg cctggctcac ccgctgctcc 600
 ctggtgatcg cccctaccg gcgtctggac cgggcgctgc gcatggcccg cgactcgggc 660

accacggtca tcgacgcgac ccctccagc taccggagca tcctgggct ggtgaccagg 720
 aagccccccc tgcgcgcgca cctggcgggc acccggatgt tctgtgtcgg cgcgccccg 780
 ctcgacgcac cgctggtgga gagctacgta caggagtctg gcctgccgct gctcgacagc 840
 tacggctcga ccgagctgaa caacatcgcc ttcgccacc tcgacaacc ggtctcctgc 900
 ggccgtgcca tggagggcat cgggctccgg atcgtcgcagc aggacggccg ggaggtggcg 960
 gccgggcagc cgggcgagat cgaggtcgac acccccgacg cactcgaagg gcagatagcc 1020
 gaggacgggtt cgatcattcc ggcgccacc ggctggcagc gcacgggcca cctcggccac 1080
 ctcgacgcgg acggcaacct ctacgtcctg ggacgcaagt tcgccgtgca ccgcatgggc 1140
 tacacgtctt atcccagact catcgagcgc aaggtcgccg ccgagggctg cccacccgg 1200
 atcgtgcccc tgcccagcga actgcgcggc tcccagctgg tgttcttctg cgaggacgac 1260
 gagcagcggg acgccggcta ctggcgggag cggctgtgcg gcctgctgcc cgccttcgag 1320
 cagcccaaca aggtggtcgt cctggagcag ttcccgtca accgcaacgg caagccggac 1380
 aagaaggagc tgacgcggat ggccgccgaa tag 1413

<210> 57
 <211> 553
 <212> PRT
 <213> Streptomyces aizunensis

<400> 57

Met Thr Ser Phe Ser Pro Ala Pro Thr Thr Met Leu Val Pro Asp Phe
 1 5 10 15
 Pro Phe Ser Tyr Asp Gly Trp Leu Arg His Pro Ala Gly Leu Gly Ala
 20 25 30
 Leu Pro Pro Glu Arg Ala Gly Thr Pro Val Ala Val Val Gly Gly Gly
 35 40 45
 Met Ala Gly Met Thr Ala Ala Tyr Glu Leu Met Arg Leu Gly Leu Arg
 50 55 60
 Pro Val Val Tyr Glu Ala Glu Gln Leu Gly Gly Arg Met Arg Ser Val
 65 70 75 80
 Pro Phe Pro Gly Gln Pro Gly Leu Val Ala Glu Met Gly Ala Met Arg
 85 90 95
 Phe Pro Leu Ser Ala Arg Ser Leu Phe His Tyr Ile Asp Leu Leu Gly
 100 105 110
 Leu Arg Thr Ser Pro Phe Pro Asn Pro Leu Ala Ala Asn Thr Pro Ser
 115 120 125
 Thr Leu Ile Asp Leu Gly Gly Glu Arg His Thr Ala Arg Ser Ala Glu

130						135						140					
Gln	Leu	Pro	Asp	Val	Tyr	Gln	Glu	Val	Ala	Ser	Ala	Trp	Glu	Lys	Ala		
145					150					155					160		
Leu	Gln	Glu	Arg	Ala	Glu	Leu	Ala	Thr	Met	Arg	Asp	Ala	Ile	Gln	Arg		
				165					170					175			
Arg	Asp	Val	Glu	Thr	Val	Lys	Gln	Ile	Trp	Asn	Arg	Leu	Val	Arg	Glu		
			180					185					190				
Phe	Asp	Asp	Gln	Ser	Phe	Tyr	Gly	Phe	Leu	Ala	Thr	Ser	Ser	Ala	Phe		
		195					200					205					
Pro	Ser	Phe	Arg	His	Arg	Glu	Ile	Phe	Gly	Gln	Val	Gly	Phe	Gly	Thr		
	210					215					220						
Gly	Gly	Trp	Asp	Thr	Asp	Phe	Pro	Asn	Ser	Leu	Leu	Glu	Ile	Leu	Arg		
225					230					235					240		
Val	Val	Tyr	Thr	Glu	Ala	Asp	Asp	Asn	Gln	Val	Ala	Ile	Asp	Gly	Gly		
				245					250					255			
Ser	Gln	Gln	Val	Pro	Arg	Gly	Leu	Trp	Glu	His	Arg	Pro	Arg	Gly	Cys		
			260					265					270				
Ala	His	Trp	Pro	Ala	Gly	Thr	Ser	Leu	Ala	Ser	Leu	His	Gly	Gly	Thr		
		275					280					285					
Ala	Arg	Pro	Arg	Val	Arg	Ala	Val	Ala	Arg	Asp	Gly	Asp	Gly	Phe	Leu		
	290					295					300						
Val	Thr	Asp	Ala	Asp	Gly	His	Arg	Glu	Arg	Phe	Ala	Ser	Val	Val	Tyr		
305					310					315					320		
Thr	Pro	His	Val	Trp	Thr	Leu	Leu	Asn	Arg	Val	Ala	Cys	Asp	Pro	Ala		
				325					330					335			
Leu	Leu	Thr	Gln	Pro	Leu	Trp	Thr	Ala	Val	Glu	Arg	Thr	His	Tyr	Met		
			340					345					350				
Gly	Ala	Ser	Lys	Leu	Phe	Val	Leu	Ala	Asp	Arg	Pro	Phe	Trp	Asn	Asp		
		355					360					365					
Thr	Asp	Pro	Arg	Thr	Gly	Arg	Pro	Val	Met	Ser	Met	Thr	Leu	Thr	Asp		
	370					375					380						
Arg	Met	Pro	Arg	Gly	Val	Tyr	Leu	Phe	Asp	Asp	Gly	Pro	Asp	Arg	Pro		
385					390					395					400		
Gly	Val	Met	Cys	Leu	Ser	Tyr	Thr	Trp	Asn	Asp	Asp	Ser	Leu	Lys	Met		
				405					410					415			
Ala	Thr	Leu	Ser	Ala	Asp	Glu	Arg	Leu	Asp	Val	Leu	Leu	Glu	Lys	Leu		
			420					425					430				
Gly	Val	Ile	Tyr	Pro	Gly	Val	Asp	Ile	Arg	Ser	His	Val	Ile	Gly	Asp		
		435					440					445					
Pro	Ile	Thr	Ile	Thr	Trp	Glu	Ser	Glu	Pro	His	Phe	Met	Gly	Ala	Phe		

450																
Lys	Ser	Asn	Leu	Pro	Gly	Gln	Tyr	Arg	Tyr	Gln	Arg	Arg	Leu	Phe	Thr	
465					470					475					480	
Gln	Phe	Met	Gln	Arg	Gly	Leu	Pro	Arg	Ala	Gln	Arg	Gly	Phe	Phe	Leu	
				485					490					495		
Cys	Gly	Asp	Asp	Val	Ser	Trp	Thr	Ala	Gly	Phe	Ala	Glu	Gly	Ala	Val	
			500					505					510			
Thr	Thr	Ala	Leu	Asn	Ala	Val	Trp	Gly	Val	Leu	Asp	His	Leu	Gly	Gly	
		515					520					525				
Ala	Thr	Pro	Pro	Gly	Asn	Pro	Gly	Pro	Gly	Asp	Leu	Phe	Asp	Ala	Leu	
		530				535					540					
Ala	Pro	Leu	Asp	Leu	Pro	Tyr	Asp	Ser								
545					550											

<210> 58
 <211> 1662
 <212> DNA
 <213> Streptomyces aizunensis

<400> 58
 atgacgtcat tcagcccggc tcccaccacc atgctcgtgc cggacttccc gttctcctac 60
 gacggctggc tgcgccatcc cgccggactc ggcgcccttc cgcccagcgc cgccggtagc 120
 ccggtggccg tggtcggcgg gggaaatggcg ggaatgaccg ccgcgtacga actgatgcgg 180
 ctgggcctgc gcccggtcgt atacgagggc gagcaactgg gtggccggat gcggtcgggtg 240
 cccttccccg ggcagcccgc cctcgtggcg gagatggggg cgatgcgctt cccgctctcc 300
 gcgcgctcgc tgttcacta catcgacctg ctggggctgc gcaccagccc cttccccaac 360
 ccgctggcgg cgaacacccc gagcacctc atcgacctc ggcggcaacg gcacaccgcg 420
 cggctccgcg agcaactccc ggatgtgtac caggaggtgg cctcggcctg ggagaaggcc 480
 ctgcaggagc gggccgagct ggccaccatg cgggacgcca tccagcgcgc cgacgtcgag 540
 acggtgaagc agatatgga ccgactggtc agggagtctc acgaccagtc cttctacggg 600
 ttcttggcga ccagttcggc gttcccgtcg ttccggcacc gggagatctt cggccagggtg 660
 gggttcggca ccggcggctg ggacaccgac ttccccaaact cgctcctcga aatcctgcgc 720
 gtggtctaca ccgagggcga cgacaaccag gtcgccatcg acggcggctc ccagcagggtg 780
 ccgcgcgggc tgtgggagca ccggccgcgg ggctgcgcgc actggccggc cggcacctct 840
 ctgcctcgc tgcacggagg gacggcccgc ccacgggtgc gggccgtcgc caggacgggt 900
 gacggcttcc tcgtcaccga cgccgacgga caccgggagc ggttcgcctc ggtggtgtac 960
 acccgcacg tgtggaccct gctgaaccgg gtcgcgtgcg atccggcgct gctgacgcag 1020

ccgctgtgga cgcgcgtgga gcgcacccac tacatggggg cctccaaact gttcgtcctg 1080
 gccgaccggc ctttctggaa cgacaccgat ccgcgaccg gccgtccggg gatgagcatg 1140
 acgctcacgg accggatgcc gcgcgggggtg tatctcttcg acgacggccc ggaccgcccc 1200
 ggcgtgatgt gcctgtcgta cacctggaac gacgactcgc tgaagatggc gacgctgagc 1260
 gccgacgagc ggctggacgt gctgctggag aagctcggcg tgatctatcc cggcgtcgac 1320
 atccgctccc acgtcatcgg tgatccgatc accatcacct gggagagcga gccgcatttc 1380
 atgggcgcgt tcaagtcaa tctgccgggc cagtaccgct accagcgcag gctgttcacg 1440
 cagttcatgc agcgcgggct gccgcggggc cagcgcggct tcttctgtg cggcgacgac 1500
 gtgtcctgga cggcgggctt cgcgaggggc gcggtcacga cggcgctgaa cgcggtgtgg 1560
 ggcgtactgg accacctggg cggggccacg ccgccggca accccggccc cggcgacctc 1620
 ttcgacgcgc tggctcccct cgacctcccc tacgacagct ga 1662

<210> 59
 <211> 231
 <212> PRT
 <213> Streptomyces aizunensis

<400> 59

Met Ile Glu Glu Leu Leu Pro Glu Gly Ala Val Ala Ser Glu Ala Phe
 1 5 10 15
 Gly Pro Asp Gly Ser Ala Leu Leu Tyr Pro Glu Glu Ala Ala Leu Val
 20 25 30
 Ala Met Thr Thr Asp Leu Arg Arg Glu Glu Phe Ala Thr Val Arg Ala
 35 40 45
 Cys Ala Arg Arg Ala Leu Ala Ala Leu Gly Leu Pro Ser Ala Pro Val
 50 55 60
 Leu Pro Gly Val Arg Asn Val Pro Gln Trp Pro Asp Gly Val Val Gly
 65 70 75 80
 Ser Met Thr His Cys Ala His Tyr Arg Ala Ala Val Leu Ala Arg Asp
 85 90 95
 Thr Asp Leu Ala Met Ile Gly Ile Asp Ala Glu Pro Asp Leu Pro Leu
 100 105 110
 Pro Glu Gly Val Leu Glu Ser Ile Ala Leu Pro Arg Glu Leu Ala Trp
 115 120 125
 Ala Arg Ser Gly Gly Tyr Gly Ser Ser Leu Arg Arg Asp Arg Leu Leu
 130 135 140
 Phe Ser Ala Lys Glu Ala Val Tyr Lys Thr Trp Tyr Pro Leu Leu Gly
 145 150 155 160

Thr Glu Leu Asp Phe Asp Asp Ala Asp Ile Thr Phe Arg His Glu Val
 165 170 175
 Gly Pro Asn Gly Arg Pro Gln Gly Thr Phe Thr Ala Arg Ile Leu Arg
 180 185 190
 Pro Leu Pro Gly Pro Asp Gly Arg Pro Val Asp Arg Phe Thr Gly Arg
 195 200 205
 Trp Leu Ser Asp Arg Gly Ile Ile Val Thr Val Ile Thr Leu Pro Ala
 210 215 220
 Tyr Arg Val Ala Thr Thr Arg
 225 230

<210> 60
 <211> 696
 <212> DNA
 <213> Streptomyces aizunensis

<400> 60
 atgatcgagg aactgctccc cgaaggggcg gtcgcgagcg aggccttcgg gccggacgga 60
 tcggcgctgc tctaccccga ggaggcggcg ctggtcgcca tgacgacgga tctgcgccgc 120
 gaggagtctg ccaccgtccg ggcgtgtgcg cggcgcgccc tcgccgact ggggctgccg 180
 tctgctcccg tactgcccgg ggtgcgcaat gtgccccagt ggcccgacgg cgtggtcggc 240
 agcatgacc attgcgccca ctaccgggcc gccgtcctgg cgcgggacac ggacctggcg 300
 atgatcgga tcgacgccga accgatctg ccctgcccc aaggggtgct ggagtcgatc 360
 gcgctgccgc gcgagctggc ctgggcgcbc tcgggaggat acggctccag cctgcgccgg 420
 gaccgtctgc tcttcagtgc caaggaagcg gtctacaaga cctggtacc gctgctgggc 480
 accgagctgg acttcgacga cgccgacatc accttcgcc acgaggtcgg cccgaacggc 540
 cggccgcagg gcacgttac ggcccgcatt ctgcgctccgc tgcccgggtcc cgacggggcg 600
 ccggtggaca ggttcacggg ccgctggctt tcggaccgcg gcatcatcgt cacggtcac 660
 accctgcccg cctatcgcgt ggcgaccacg cggtaa 696

<210> 61
 <211> 306
 <212> PRT
 <213> Streptomyces aizunensis

<400> 61

Met Ser His Thr Pro Pro Asp His Val Thr Ala Glu Ala Gly Pro Arg
 1 5 10 15
 Leu Leu Ala Val Ser Asp Leu His Ile Gly Met Ala Asp Asn Arg Pro
 20 25 30
 Ile Thr Glu Ser Leu Arg Pro Ser His Glu Asp Asp Trp Leu Ile Val

agcgatctgc acatcgggat ggccgacaac cggcccatca ccgagtcgct gcgcccctcc 120
 cacgaggacg actggctgat cgtggccggg gacgtcggcg agctgaccga ggacatcgag 180
 tgggcgctgc gcctgctggc cgggcggttc gccaaggtcg tgtgggcgcc gggcaaccac 240
 gagctgtgga ccccgcgca ggacacgggtg cagttgcgcg gcgaggagcg ctaccgggtac 300
 ctgggtggaga tgtgccgggg gctgggcgtg gtcacgcccg aggaccctg gccgggtgtg 360
 gagggtcccc gcggcccggg cgcggtcgtc ccgctgttcc tgctgtacga ctacacgttc 420
 cgggtggcgg gcacctcgac caaggaggag tcgctggccc gggcgcacga ggcgggtgtg 480
 gtgtgcacgg acgagtacct gctccacccc gaccctacc ggagccgtga cgactgggtgc 540
 cgggcccgtg tctccgcgac ccggcggcgg ctggtggcgc acgatccgtc ggtgccgctg 600
 gtgctggtca accacttccc gctggtgccc gagcccacgg acgtgctgtg gcaccgggag 660
 ttcgcgagc ggtgcggcac ggtgctgacc gccgactggc accgccggtt cagcacggcc 720
 gccgtggtgt acgggcacct gcacatcccc aggaccacct ggtacgacgg ggtccggttc 780
 gaggaggtgt cgatcggcta cccgcgcgag tggcgcggc gcggccatcc cagggggctg 840
 ctgcggcaga tcctgccgta caccocggaa ccggaaccgg agacccccgc caggaccgaa 900
 ccgcaggaga cacgggcatg a 921

<210> 63
 <211> 998
 <212> PRT
 <213> Streptomyces aizunensis

 <400> 63

Met Gly Lys Ala Phe Ala Ala Val Leu Val Glu Arg Asp Glu Gln Ile
 1 5 10 15
 Gly Arg Leu Thr Ser Phe Val Ser Gly Thr Ala Ser Gly Ala Val Ala
 20 25 30
 Ala Ala Ala Ala Gly Thr Gly Arg Ile Ala Val Ile Asp Gly Pro Val
 35 40 45
 Ala Ser Gly Lys Thr Ala Leu Leu His Arg Val Leu Glu Leu Thr Ala
 50 55 60
 Gly Ala Gly Pro Arg Val Ile Thr Ala Val Thr Ser Pro Ala Glu Gln
 65 70 75 80
 Ser Met Pro Phe Gly Val Val Glu Gln Leu Val Arg Asp Ala Gln Ala
 85 90 95
 Val Ser Asp Arg Leu Pro Leu His Pro Ser Ala Gly Pro Asp Ala Ala
 100 105 110

Leu Asp Ser Thr Pro Arg Pro Glu Ser Glu Pro Val Pro Ala Glu Ile
 115 120 125
 Leu Met Ala Phe His Leu Gln Leu Ala Glu Val Cys Ala Arg Gly Pro
 130 135 140
 Val Leu Ile Val Val Asp Asp Val Gln Tyr Ala Asp Pro Gln Ser Leu
 145 150 155 160
 Tyr Cys Leu Ala His Met Leu Leu Arg Ala Ser Ala Ser Gly Ala Val
 165 170 175
 Val Ser Leu Leu Val Ser Arg Gly Pro Asp Val Gly Gly Thr Pro Pro
 180 185 190
 Val Val Leu Glu Glu Leu Leu Tyr Gln Leu Arg Gly Leu His Val Arg
 195 200 205
 Leu Gly Pro Leu Ser Val Asp Gly Val Gly Arg Leu Leu Ala Ala Arg
 210 215 220
 Asp Pro Glu Ala Gly Ala Arg Lys Pro Ala Ala Pro Ala Ser Trp Ser
 225 230 235 240
 Thr Pro Leu Ala Ala Ser Val His Ala Ala Thr Gly Gly Asn Pro Leu
 245 250 255
 Leu Val His Gly Leu Ile Glu Asp Arg Leu Ser Arg Gln Arg Leu Leu
 260 265 270
 Ala Ala Gly Pro Gly Ala Gly Pro Ala Ser Ala Glu Ala Gly Asn Gly
 275 280 285
 Thr Gly Asn Glu Thr Glu Asp Ala Leu Ala Gly Thr Pro His Ala Gly
 290 295 300
 Asp Gln Phe Leu Gln Ser Ala Leu Ile Cys Val His Arg Thr Gly Ser
 305 310 315 320
 Asp Gly Leu Arg Val Ala Gln Gly Ile Ala Leu Leu Gly Gly Ala Gly
 325 330 335
 Ser Thr Ser Leu Leu Ala Arg Leu Val Glu Val Glu Glu Trp Thr Val
 340 345 350
 Glu Gln Val Val Thr Ala Leu Asn Glu Ala Gly Val Leu Glu Lys Ser
 355 360 365
 Val Phe Arg His Gly Gly Val Gln Thr Ala Val Val Glu Ser Leu Thr
 370 375 380
 Asp Glu Ala Ala Thr Arg Leu Arg Gln Arg Ala Ala Val Leu Leu Tyr
 385 390 395 400
 Glu Asp Gly Ala Ala Pro Leu Thr Ile Ala Ala Gln Leu Leu Ser His
 405 410 415
 Glu Met Ser Ala Pro Asp Glu Glu Trp Val Pro Arg Val Leu Ser Glu
 420 425 430

Ala Ala Arg Ala Ala Leu Cys Thr Gln Gln Val Glu Phe Ala Val Arg
435 440 445

Cys Leu Arg Met Ala Glu Ser Cys Cys Arg Asp Glu Thr Glu Arg Met
450 455 460

Leu Leu Arg Ala His Leu Ala Lys Tyr Ile Trp Arg Val Gln Pro Ser
465 470 475 480

Ala Trp Pro Gln Gln Leu Arg Pro Leu Leu Gly Ala Val Arg Asp Gly
485 490 495

Leu Leu Pro Pro Val Asp Thr Val Arg Leu Val Tyr Asp Leu Leu Trp
500 505 510

Asn Gly Trp Met Asp Asp Ala Ala Ala Ala Ile Arg Gln Val Val Asp
515 520 525

Val Leu His Arg Ser Pro Asp Ala Arg Leu Ala Thr Glu Leu Gly Ala
530 535 540

Leu Arg Leu Ala Leu Ala Ser Thr Tyr Pro Ala Val Leu Glu His Leu
545 550 555 560

Gly Asp Val Pro Ala Pro Ala Arg Gly Ala Gly Glu Arg Leu Ser Ala
565 570 575

Gln Glu Glu Ile Leu Leu Thr Ser Ala Arg Val Leu His Gly Val Leu
580 585 590

Arg Gly Gly Asp Gly Ala Arg Asp Thr Asp Pro Asp Thr Asp Ala Glu
595 600 605

Asp Phe Ala Glu Ser Ala Glu Arg Thr Leu Ala Gly Thr Arg Leu Thr
610 615 620

Glu Glu Thr His Leu Gly Leu Arg Ala Cys Leu Leu Thr Leu Phe Tyr
625 630 635 640

Ala Asp Arg Pro Ala Thr Ala Thr Leu Trp Ala Asp Arg Leu Leu Val
645 650 655

Glu Ala Ala Asp Arg Lys Ala Pro Gly Trp Thr Ala Val Leu Arg Ala
660 665 670

Ile Arg Ala His Met Ser Leu Arg Arg Gly His Leu Val Glu Ala Arg
675 680 685

Arg Leu Ala Glu Gln Ala Leu Asp Gln Leu Pro Pro His Gly Trp Gly
690 695 700

Val Gly Ile Gly Met Pro Leu Ser Ala Leu Ile Glu Ala Arg Thr Ala
705 710 715 720

Met Gly Asp His Glu Ala Ala Ala Glu Leu Leu Asp Arg Pro Val Pro
725 730 735

Glu Asp Met Leu Thr Thr Arg His Gly Leu His Tyr Leu Tyr Ala Arg
740 745 750

Gly Arg His Gln Leu Ala Thr Gly Arg His His Ala Ala Leu Thr Asp
 755 760 765
 Phe Thr Ala Cys Gly Glu Leu Met Arg Arg Trp Gly Met Asp Arg Ser
 770 775 780
 Thr Leu Val Pro Trp Arg Val Gly Val Ala Glu Ala Arg Leu Ala Leu
 785 790 795 800
 Gly Ser Arg Glu Glu Ala Glu Arg Phe Ala Arg Glu Gln Leu Ala Gly
 805 810 815
 Asp Ala Gly Gln Arg Val Arg Gly His Ala Leu Arg Val Leu Ala Ala
 820 825 830
 Ala Arg Pro Leu Arg Glu Arg Pro Ala Leu Leu Ala Gln Ala Val Ala
 835 840 845
 Leu Leu Gln Glu Asp Ser Asp Trp Tyr Glu Leu Ala Arg Ala Leu Thr
 850 855 860
 Asp Leu Gly Gln Ala Tyr Lys Gln Leu Gly Asp Pro Ser Gln Gly Lys
 865 870 875 880
 Val His Thr Arg Arg Ala Trp Arg Ile Ala Lys Gly Cys Gly Ala Arg
 885 890 895
 Glu Leu Tyr Arg Ser Leu His Pro Ser Gln Pro Pro Ala Pro Ser Ala
 900 905 910
 Pro Ala Ala Gln Pro Arg Pro Ala Ala Pro Ala Asp Ala Ala Arg Pro
 915 920 925
 Pro Ser Ala Ala Val Ser Ser Leu Thr Asp Ala Glu Arg Lys Val Ala
 930 935 940
 Ala Leu Ala Ala His Gly Tyr Thr Asn Arg Glu Ile Gly Ala Lys Leu
 945 950 955 960
 Phe Ile Thr Val Ser Thr Val Glu Gln His Leu Thr Arg Val Tyr Arg
 965 970 975
 Lys Ile Asn Ile Thr His Arg Gln Asp Leu Pro Val Ser Leu Asp Thr
 980 985 990
 Asp Val Ala His Thr Ala
 995

<210> 64

<211> 2997

<212> DNA

<213> *Streptomyces aizunensis*

<400> 64

atggggaagg ctttgcagc tgtggtggtg gagcgagatg aacagatcgg aagactgacc 60

tccttcgtat ccggcaccgc ttccggcgcg gtggcccgcg ccgccgccgg gaccggccgg 120

atcgccgtga tcgacgggcc ggtggcttcg ggaaagacgg cgctctcca tcgctgtctg 180

gagctgacgg	ccggggcggg	gccacgcgtc	atcaccgcgg	tcacctcgcc	cgcggaacag	240
tccatgccgt	tcggcggtgt	ggagcagctg	gtgcgcgacg	cgcaggccgt	ctccgaccgg	300
ctgccgctcc	accgctcggc	cggaccggac	gcgggcgtgg	actcgacgcc	gcggccggag	360
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gcgcgcgggc	cggtcctgat	cgtcgtcgac	gacgtgcagt	acgccgaccc	gcagtcgctg	480
tactgcctcg	cccacatgct	gctccggggc	tccgcctccg	gcgccgtggt	gtcgctgctg	540
gtgagcccg	gcccggacgt	gggcggcacg	ccgcccgctg	tcttgaggga	attgctctac	600
caactgcccc	gcctgcacgt	ccggctgggt	ccgctcagt	tcgacggcgt	cggccggctg	660
ctcgccggcc	gggaccggga	ggccggagcg	aggaagcccc	cggccccctg	ctcgtggtcc	720
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gcgtcggccg	aggccgggaa	cgggaccggg	aacgagaccg	aggacgccct	cgccgggaacg	900
ccccacgcgg	gcgaccagtt	cctgcagagc	gcgctgatct	gtgtgcaccg	cacgggatcc	960
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ctcgcccggc	tcgtggaggt	cgaggagtgg	accgtggagc	aggtggtcac	cgccctcaac	1080
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acgcggctga	cggaggagac	ccacctcggg	ctgcgcgcgt	gcctgctgac	gctcttctac	1920
gcggaccggc	cggccacggc	gacgctgtgg	gccgaccggc	tgctggtgga	ggcggcggac	1980

cgcaaggcgc cgggggtggac cgcggtgctg cgggcgatcc gcgcgcacat gtccttgcgc 2040
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 cacgggtggg gcgtgggcat cgggatgccg ctgtcggccc tcatcgaggc gcggacggcg 2160
 atgggcgatc acgaggcggc ggcggagctg ctggaccgcc cggtgccgga ggacatgctc 2220
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 ggcagcccg aagaggcggga acgtttcgcc agggagcagc tcgccgggga cgccggtcag 2460
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 gcgctgctcg cgcaggcggg cgcgctgctc caggaggaca gcgactggta cgagctggcg 2580
 cgggcgctga ccgatctcgg gcaggcgtac aagcagctcg gcgaccgctc ccagggcaag 2640
 gtgcacacc gcagggcgtg gcggatgcc aagggctgcbg gcgcccggga gctgtaccgc 2700
 tcctgcatc cgagccagcc cccggcgccc tcggcgccc cgcgcgagcc gcgcccgc 2760
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 cgcaaggtgg cggcgctggc ggcgcacggt tacaccaacc gggagatcgg ggccaagctc 2880
 ttcatcacg tcagcacggt cgagcagcat ctgaccggg tctaccggaa gatcaacatc 2940
 acgcaccgcc aggacctgcc ggtcagtttg gataccgatg tcgcacacac cgctga 2997

<210> 65
 <211> 518
 <212> PRT
 <213> Streptomyces aizunensis

<400> 65

Met Thr Thr Thr Val Ile Gly Lys Val Ala Glu Leu Tyr Ala Val Arg
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 20 25 30
 Ala Lys Gly Lys Leu Thr Ala Arg Glu Arg Ile Gly Leu Leu Leu Asp
 35 40 45
 Glu Gly Ser Phe Arg Glu Val Glu Gln Leu Arg Arg His Arg Ala Ser
 50 55 60
 Gly Phe Gly Leu Glu Ala Lys Arg Pro Tyr Thr Asp Gly Val Ile Thr
 65 70 75 80
 Gly Trp Gly Thr Ile Glu Gly Arg Thr Val Phe Val Tyr Ala His Asp
 85 90 95

Phe Arg Ile Phe Gly Gly Ala Leu Gly Glu Ala His Ala Thr Lys Ile
100 105 110
His Lys Ile Met Asp Met Ala Ile Ala Ala Gly Ala Pro Leu Val Ser
115 120 125
Leu Asn Asp Gly Ala Gly Ala Arg Ile Gln Glu Gly Val Ser Ala Leu
130 135 140
Ala Gly Tyr Gly Gly Ile Phe Gln Arg Asn Thr Lys Ala Ser Gly Val
145 150 155 160
Ile Pro Gln Ile Ser Val Met Leu Gly Pro Cys Ala Gly Gly Ala Ala
165 170 175
Tyr Ser Pro Ala Leu Thr Asp Phe Val Phe Met Val Arg Glu Thr Ser
180 185 190
Gln Met Phe Ile Thr Gly Pro Asp Val Val Lys Ala Val Thr Gly Glu
195 200 205
Glu Ile Thr Gln Asn Gly Leu Gly Gly Ala Asp Val His Ala Gly Thr
210 215 220
Ser Gly Val Ala His Phe Ala Tyr Asp Asp Glu Glu Thr Cys Ile Ala
225 230 235 240
Glu Val Arg Tyr Leu Leu Ser Met Leu Pro Ser Asn Asn Arg Glu Asn
245 250 255
Pro Pro Ala Val Gln Ala Gly Asp Pro Ala Asp Arg Arg Cys Asp Ala
260 265 270
Leu Leu Asn Leu Val Pro Val Asp Gly Asn Arg Pro Tyr Asp Met Leu
275 280 285
Lys Val Ile Glu Glu Ile Val Asp Asp Gly Asp Tyr Val Glu Ile His
290 295 300
Glu Gly Trp Ser Arg Asn Ile Ile Cys Ala Leu Ala Arg Leu Asp Gly
305 310 315 320
Gln Val Val Ala Ile Val Ala Asn Gln Pro Gln Phe Leu Ala Gly Val
325 330 335
Leu Asp Ile Gly Ala Ser Glu Lys Ala Ala Arg Phe Val Gln Met Cys
340 345 350
Asp Ala Phe Asn Ile Pro Ile Val Thr Leu Leu Asp Val Pro Gly Phe
355 360 365
Leu Pro Gly Val Asp Gln Glu His Gly Gly Ile Ile Arg His Gly Ala
370 375 380
Lys Leu Leu Tyr Ala Tyr Cys Asn Ala Thr Val Pro Arg Ile Ser Leu
385 390 395 400
Ile Leu Arg Lys Ala Tyr Gly Gly Ala Tyr Ile Val Met Asp Ser Gln
405 410 415

Ser Ile Gly Ala Asp Leu Thr Tyr Ala Trp Pro Thr Asn Glu Ile Ala
 420 425 430
 Val Met Gly Ala Glu Gly Ala Ala Asn Val Ile Phe Arg Arg Gln Ile
 435 440 445
 Ala Glu Ser Gly Asp Pro Glu Ala Met Arg Ala Arg Met Val Lys Glu
 450 455 460
 Tyr Lys Ala Glu Leu Met His Pro Tyr Tyr Ala Ala Glu Arg Gly Leu
 465 470 475 480
 Val Asp Asp Val Ile Asp Pro Ala Glu Thr Arg Glu Val Leu Ile Ala
 485 490 495
 Ser Leu Ala Met Leu Arg Thr Lys His Ala Asp Leu Pro Pro Arg Lys
 500 505 510
 His Gly Asn Pro Pro Gln
 515

<210> 66
 <211> 1557
 <212> DNA
 <213> Streptomyces aizunensis

<400> 66
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 cgtgggcccga gcgaccgggc gacggaggcg cagcacgcga agggaaagct gaccgcccgt 120
 gagcggatcg gccttttgct ggacgagggt tcgttcaggg aggtcgaaca gctgcccggg 180
 caccgggcca gcggtttcgg cctggaggcg aagaggcctt acacggatgg tgtgatcacc 240
 ggttggggca ccatcgaggg ccgtacggtc ttcgtctacg cgcacgactt ccgatcttc 300
 ggcggggcgc tgggcgaggc ccacgccacg aagatccaca agatcatgga catggcgatc 360
 gccgcccgtg ctccgctggt ctccgctgaac gacggcggcg gcgcccgtat ccaggagggc 420
 gtctcggcgc tggccgggta cggcggcatc ttccagcgca acaccaaggc gtccggggtc 480
 atcccgcaga tcagtgtgat gctcggcccg tgcgcccggc gcgccccta ttcgcccggc 540
 ctgacggact tcgtgttcat ggtccgtgag acctcgcaga tgttcatcac cggtcgggac 600
 gtggtcaagg ccgtcaccgg cgaggagatc acgcagaacg ggctcggcgg cgcggacgtg 660
 cacgcccggga cctcgggctg cgcgcacttc gcgtacgacg acgaggagac ctgcatcgcg 720
 gaggtccgct atctgctgtc gatgctcccc tccaacaacc gggagaacct gcccgccgtc 780
 caggcccggg acccggccga ccggcgctgc gacgccttgc tgaacctcgt accggtggac 840
 gggaaccgtc cgtacgacat gctcaaggtc atcgaggaga tcgtcgacga cggcgactac 900
 gtcgagatcc acgagggctg gtcccgaac atcatctgcg cgctggcccg tctggacggc 960
 cagggtggtcg ccatcgtcgc caaccagccg cagttcctgg ccggcgtgct ggacatcggg 1020

gcatcggaga aggccgcgcg cttcgtgcag atgtgcgacg cttcaacat cccgatcgtg 1080
 aactgctcg atgtgcccgg cttcctgccg ggcgtcgacc aggagcacgg cgggatcatc 1140
 cggcacggcg cgaagctgct gtacgcgtac tgcaacgcga ccgtgccgcg gatctccctg 1200
 atcctgcgca aggcgtacgg cggcgcctac atcgtcatgg actcccagtc catcggcgcg 1260
 gacctcacct acgcctggcc gaccaacgag atcgcggtga tgggcgccga gggcgccgcc 1320
 aacgtcatct tccgccggca gatcgccgag tccggggacc ccgaggcgat gcgcgcgcyg 1380
 atgggtcaagg agtacaaggc cgagctgatg caccctact acgcggccga gcggggcctg 1440
 gtcgacgacg tcatcgacc tgccgagacc cgcgaggtgc tgatcgctc cctcgccatg 1500
 ctccgcacga agcacgcgga cctgcccggc cgcaaacacg gcaaccccc gcagtga 1557

<210> 67
 <211> 329
 <212> PRT
 <213> Streptomyces aizunensis

<400> 67

Met	Thr	Ala	His	Pro	Asn	Gly	Val	Thr	Pro	Pro	Leu	Pro	Pro	Thr	Glu	1	5	10	15
Thr	Asp	Arg	Thr	Leu	His	Phe	Ala	Gly	Pro	Ala	Thr	Phe	Gly	Arg	Ile	20	25	30	
Pro	Arg	Ile	Asp	Gln	Val	Glu	Lys	Thr	Asp	Ile	Ala	Val	Val	Gly	Val	35	40	45	
Pro	Phe	Asp	Ser	Gly	Val	Thr	Tyr	Arg	Pro	Gly	Ala	Arg	Phe	Gly	Gly	50	55	60	
Asn	Ala	Ile	Arg	Glu	Ala	Ser	Arg	Thr	Leu	Arg	Pro	Tyr	Asn	Pro	Ala	65	70	75	80
Gln	Asn	Val	Tyr	Pro	Phe	His	Phe	Ser	Gln	Val	Ala	Asp	Ala	Gly	Asp	85	90	95	
Ile	Ser	Ala	Asn	Pro	Phe	Asp	Leu	Asn	Asp	Ala	Val	Glu	Thr	Ile	Glu	100	105	110	
Ala	Ala	Ala	Asp	Asp	Leu	Ile	Ser	Ser	Gly	Ala	Arg	Leu	Met	Thr	Leu	115	120	125	
Gly	Gly	Asp	His	Thr	Ile	Ala	Leu	Pro	Met	Leu	Arg	Ala	Val	Ala	Lys	130	135	140	
Lys	His	Gly	Pro	Leu	Ala	Val	Leu	His	Phe	Asp	Ala	His	Leu	Asp	Thr	145	150	155	160
Trp	Asp	Asp	Tyr	Phe	Gly	Gln	Gln	Tyr	Thr	His	Gly	Met	Pro	Phe	Arg	165	170	175	

Arg Ala Val Glu Glu Gly Ile Leu Asp Thr Ser Ala Leu Ser His Val
 180 185 190
 Gly Thr Arg Gly Pro Ile Tyr Gly Lys Lys Asp Leu Asp Asp Asp Glu
 195 200 205
 Lys Leu Gly Phe Gly Ile Val Thr Ser Ala Asp Val Met Arg Arg Gly
 210 215 220
 Val Asp Glu Val Ala Gln Gln Leu Arg Glu Arg Val Gly Asp Arg Pro
 225 230 235 240
 Leu Tyr Ile Ser Ile Asp Ile Asp Val Leu Asp Pro Ala His Ala Pro
 245 250 255
 Gly Thr Gly Thr Pro Glu Ala Gly Gly Leu Thr Ser Arg Glu Leu Leu
 260 265 270
 Glu Ile Leu Arg Gly Leu Ala Asp Cys His Leu Val Ser Ala Asp Ile
 275 280 285
 Val Glu Val Ala Pro Ala Tyr Asp His Ala Asp Ile Thr Ser Val Ala
 290 295 300
 Ala Ser His Ala Ala Tyr Glu Leu Ile Ser Ile Met Ser Lys Gln Ile
 305 310 315 320
 Ala Pro Val Arg Trp Gly Ala Thr Gln
 325

<210> 68
 <211> 990
 <212> DNA
 <213> Streptomyces aizunensis

<400> 68
 atgaccgcgc accccaacgg agtgaccccc cgcgtgccgc cgacggagac cgaccggacg 60
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 accgacatcg ccgtggtcgg cgtgcctttc gacagcggcg tcacctatcg gccgggcgcc 180
 cgcttcggcg gcaacgccat ccgggaggcg tcccgcaccc tgcgtcccta caaccggcg 240
 cagaacgtct accccttcca cttcagtcag gtcgcggacg ccggtgacat cagcgccaac 300
 cccttcgacc tgaacgacgc cgtggagacg atcgaggcgg ccgccgacga cctgatctcc 360
 agcggcgccc gtctgatgac gctggggcggc gaccacacca tcgccctgcc gatgctcgt 420
 gccgtggcga agaagcacgg tcccctcgcc gtctgcact tcgacgcca tctggacacc 480
 tgggacgact acttcgggca gcagtacacc cacggcatgc cgttcgcggc cgccgtggag 540
 gagggcatcc tcgacacctc cgccctctcc cacgtcggca cgcgcggccc gatctacggc 600
 aagaaggatc tcgacgacga cgagaagctc ggcttcggca tcgtcacctc ggccgatgtg 660
 atgcggcgcg gagtggacga ggtggcccag cagttgcgcg agcgcgtcgg cgaccgtccc 720

ctgtacatct ccatcgacat cgacgtcctg gacccggcgc acgccccggg caccggcacc 780
 cccgaggccg ggggctcac ctcccgcgag ctgctggaga tcctgcgagg gctcgcggac 840
 tgccacctgg tctccgagga catcgtggag gtcgctccgg cctacgacca cgccgacatc 900
 acctcggtag cggcgtccca cgctgcctac gagctgatca gcatcatgtc caagcagata 960
 gccccggtcc gctgggggtgc gacgcagtaa 990

<210> 69
 <211> 521
 <212> PRT
 <213> Streptomyces aizunensis

<400> 69

Val Thr Pro Gln Asp His Trp Trp Ser Ala Ser Gln Ser Tyr Val Ser
 1 5 10 15
 Asp Ile Leu Ser Val Phe Ala Ala Ala Pro Asp Arg Pro Ala Val Asn
 20 25 30
 Trp Arg Gly Glu Thr Ala Ser Gly Gly Glu Leu Ile Arg Ser Val Thr
 35 40 45
 Glu Ala Phe His Ala Leu His Asp Ser Gly Val Arg Ala Gly Asp Val
 50 55 60
 Val Ala Ile Leu Val Ala Pro Asn Ser Pro Glu Met Leu Thr Ala Arg
 65 70 75 80
 Tyr Ala Ala His Leu Leu Gly Gly Ala Val Cys Tyr Leu Arg Ser Thr
 85 90 95
 Asn Pro Gly Thr Ser Glu Val Ala Leu Pro Leu Asp Gln Gln Ile Arg
 100 105 110
 Ile Leu Arg Asp Thr Glu Ala Val Thr Val Tyr Thr Asp Ala Glu Asn
 115 120 125
 Ala Pro Arg Ala Ala Glu Leu Ala Ala Gly Ala Ser Gly Leu Pro Val
 130 135 140
 Thr Cys Leu Thr Gly Glu Ala Arg Lys Arg Glu Ser Ala Glu Asp Ala
 145 150 155 160
 Pro Arg Ala Leu Pro Trp Ala Pro Asp Ala Leu Ala Leu Ile Thr Phe
 165 170 175
 Thr Ser Gly Ser Thr Gly Arg Pro Lys Gly Ile Arg Leu Ala Gly Arg
 180 185 190
 Ala Trp Asn Gly Leu Val Gln Gly Met Val Ala Ala Gly Gly Glu Ala
 195 200 205
 Glu Gly Val Lys Leu Leu Val Thr Thr Pro Leu Ser His Thr Val Gly
 210 215 220

Ser Met Ala Asp Thr Ala Leu Ala Leu Gly Gly Glu Val Tyr Leu His
 225 230 235 240
 Glu Asn Phe Asn Ala Glu Gln Phe Val Asn Thr Val Ala Asp Glu Gly
 245 250 255
 Ile Ala Trp Thr Phe Met Ala Thr Val His Leu Phe Gln Leu Leu Asp
 260 265 270
 His Leu Glu Glu Arg Gly Leu Lys Asp Val Glu Glu Gly Arg Leu Ala
 275 280 285
 Pro Leu Gln Arg Leu Ile Tyr Ser Gly Ser Ala Ala Ala Pro Ala Arg
 290 295 300
 Ile Ala Gln Ala Val Lys Ala Phe Gly Leu Ile Ile Val Gln Ala Tyr
 305 310 315 320
 Gly Thr Gly Glu Thr Gly Arg Leu Thr Thr Leu Phe Pro His Glu His
 325 330 335
 Leu Asp Pro Trp Leu Ser Thr Thr Val Gly Arg Pro Phe Pro Asp Val
 340 345 350
 Glu Val Val Val Gly Asp Gln Glu Ser Gly Ala Pro Leu Ala Thr Gly
 355 360 365
 Glu Val Gly Glu Val Arg Val Arg Ser Pro His Met Met Asp Gly Tyr
 370 375 380
 Thr Gly Asp Pro Ala Ala Thr Ala Lys Val Leu Arg Asp Gly Trp Tyr
 385 390 395 400
 His Thr Gly Asp Ile Gly Tyr Thr Asp Glu His Gly Tyr Leu His Leu
 405 410 415
 Leu Gly Arg Val Ala Asp Val Val Lys Val Asn Gly Val Lys Val His
 420 425 430
 Pro Thr Val Val Glu Arg Glu Leu Leu Ser Leu Ala Gly Val Arg His
 435 440 445
 Ala Ala Val Tyr Gly Val Arg Asp Gln Asp Ala Val Glu His Leu His
 450 455 460
 Ala Thr Ile Val Cys Asp Pro Ala Val Pro Val Glu Thr Asp Ala Ile
 465 470 475 480
 Arg Ala His Leu Ala Gln Ser Leu Ser Gly Leu His Val Pro Glu Lys
 485 490 495
 Ile Ser Val Val Ala Asp Leu Pro Leu Asn Asp Asn Gly Lys Pro Asp
 500 505 510
 Lys Val Arg Leu Gln Leu Leu Asp Ser
 515 520

<210> 70
 <211> 1566
 <212> DNA

<213> Streptomyces aizunensis

<400> 70

gtgacccccg aggaccattg gtggagcgca agccagagtt acgtctcgga catcctctcc 60
gttttcgcgg cggccccgga ccgccccgcg gtgaattggc ggggcgagac ggcctccggc 120
ggtgaattga ttcggtcggt gaccgaggcg ttccacgcac tgcacgacag cggcgtgcgc 180
gcgggcgatg tegtggccat cctggtggcg cccaacagcc cggagatgct cacggcacgg 240
tacgggcgcg acctgctcgg cggcgcgggtg tgctacctgc ggtccaccaa ccccggaacc 300
agcgagggtg cccttccgct ggaccagcag atccggatcc tgcgggacac cgaggccgtg 360
accgtctaca cggacgccga gaacgcgccg cgcgccgccg aactggccgc gggcgccagt 420
ggactgcccg tgacgtgcct gacgggtgag gcgcgcaaga gggagagcgc ggaagacgct 480
ccgcgcgccc tgccgtgggc cccggatgca ctggccctca tcacgttcac cagcggcagc 540
accggacggc cgaagggcat ccggctggcg ggccggggcgt ggaacggcct ggtccagggc 600
atggtggcgg ccggcgggca agccgagggc gtcaagctcc tggtcaccac cccgttgagc 660
cacaccgtcg gcagcatggc ggacaccgcg ctggcgctgg gcggcgaggt ctacctgcac 720
gagaacttca acgccgaaca gttcgtcaac accgtggccg acgagggcat cgcgtggacc 780
ttcatggcga cgggccatct gttccagctg ctcgaccacc tggaggagcg cggcctgaag 840
gacgtcgagg aaggacgcct ggccccgctg cagcggctca tctacagcgg cagcgcggcg 900
gcgcccccca ggatcgcca ggccgtgaag gccttcggtc tcatcatcgt gcaggcgtac 960
ggcacgggag agaccggccg gctcaccacc ctcttcccgc acgagcacct ggaccctggt 1020
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atggacggct acaccgggga cccggcggcc accgcgaagg tctgcgcga cggctggtac 1200
cacaccggcg acatcggcta caccgacgaa cacggctatc tgcacctgct gggccgggtc 1260
gccgacgtgg tcaaggtaa cggcgtcaag gtccaccgca cggtggtcga acgggagctc 1320
ctctcgctcg cgggcgtccg gcacgccgcg gtgtacggcg tgcgggacca ggacgccgtg 1380
gagcacctgc acgccacgat cgtgtgcgac cggcggtgc cggtgagac cgacgccatt 1440
cgcgcgccacc tegcccagtc cctctccggg ctgcacgtgc ccgaaaagat cagcgtcgtc 1500
gccgatctgc cgctgaatga caacggaaaag cccgacaagg tgcggctgca gctgctcgac 1560
tcctga 1566

<210> 71

<211> 410

<212> PRT

<213> Streptomyces aizunensis

<400> 71

Met Asn Leu His Leu Glu Ser Tyr Ser Thr Gly Val Thr Ala Lys Glu
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Leu Ala Glu Arg Arg Arg Glu Phe Leu Glu Ile Gly Arg Arg Ser Gly
20 25 30
His Phe Pro Ser Ala Ser Ala Arg Gln Asp Gly Val Asp Ser Gln Ile
35 40 45
Ser Val Trp Cys Ser Asn Asp Tyr Leu Gly Met Gly Gln Asn Pro Gln
50 55 60
Val Ile Glu Ala Met Lys Lys Thr Ile Asp Thr His Gly Val Gly Ser
65 70 75 80
Gly Gly Ser Arg Asn Ile Gly Gly Thr Asn His Tyr His Val Leu Leu
85 90 95
Glu Ala Glu Leu Ala Asp Leu His Gly Lys Glu Ala Ala Leu Leu Phe
100 105 110
Thr Ser Gly Tyr Thr Ala Asn Asp Gly Ser Leu Ser Val Leu Ala Gly
115 120 125
Thr Pro Lys Asp Thr Ile Val Phe Ser Asp Glu Lys Asn His Ala Ser
130 135 140
Ile Ile Asp Gly Leu Arg His Ser Gly Ala Gln Lys His Ile Phe Arg
145 150 155 160
His Asn Asp Val Ala His Leu Ala Glu Leu Leu Ala Ala Ala Pro Ala
165 170 175
Asp Arg Pro Lys Leu Ile Val Leu Glu Ser Val Tyr Ser Met Ser Gly
180 185 190
Asp Ile Ala Pro Leu Ala Glu Ile Ala Glu Leu Ala Arg Arg Tyr Asp
195 200 205
Ala Thr Thr Tyr Ile Asp Glu Val His Ala Val Gly Met Tyr Gly Pro
210 215 220
Gln Gly Ala Gly Ile Ala Ala Arg Glu Gly Ile Ala Asp Gln Phe Thr
225 230 235 240
Val Val Met Gly Thr Leu Ala Lys Gly Tyr Gly Thr Val Gly Gly Tyr
245 250 255
Ile Ala Gly Pro Ala Ala Leu Val Asp Ala Val Arg Thr Leu Ser Arg
260 265 270
Ala Phe Val Phe Thr Thr Ser Leu Pro Pro Ala Val Ala Ala Gly Ala
275 280 285
Leu Glu Ala Val Arg Tyr Leu Arg Asn Ser Asp Val Glu Arg Lys Val

290		295		300
Leu Ala Glu Asn Ala Gln Leu Leu His Arg Leu Leu Asp Glu Ala Asp				
305		310		315 320
Ile Pro Phe Ile Ser Pro Asp Ser His Ile Val Ser Ala Phe Ile Gly				
		325		330 335
Asp Asp Glu Thr Cys Lys Gln Ala Ser Arg Leu Leu Phe Glu Arg His				
		340		345 350
Gly Ile Tyr Val Gln Ser Ile Asn Ala Pro Ser Val Pro Leu Gly Gln				
		355		360 365
Glu Ile Leu Arg Ile Ala Pro Ser Thr Val His Gly Arg Glu Asp Val				
		370		375 380
Glu Asn Phe Ala Glu Ala Leu Arg Gly Ile Trp Lys Glu Leu Asn Ile				
385		390		395 400
Pro Thr Ala Thr Asp Arg Asn Trp Leu Ser				
		405		410

<210> 72
 <211> 1233
 <212> DNA
 <213> Streptomyces aizunensis

<400> 72
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 caggacggcg tggactcca gatcagcgtc tgggtcagca acgactacct cggtatgggg 180
 cagaaccccc aggtcatcga ggcgatgaag aagaccatcg acaccacgg cgtgggctcc 240
 ggcggctcgc ggaacatcgg tggcaccaac cactaccag tgctgctcga agcggagctg 300
 gcggacctcc acggcaagga ggcggcgctc ctcttcacct cgggtacac ggccaacgac 360
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 aaccacgcgt cgatcatcga cgggctgcgg cacagcggcg cgcagaagca catcttccgg 480
 cacaacgacg tcgcgcacct ggcggagctg ctgcggccg cccccgccga cegtccgaag 540
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 gccgagctcg cgcgccgcta cgacgccacc acgtacatcg acgaggtgca cgcggctcggc 660
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 gccgccctcg tcgacgccgt gcgcaccctg tcgcgcgcct tcgtcttcac cacctcgtg 840
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<210> 73
 <211> 506
 <212> PRT
 <213> Streptomyces aizunensis
 <400> 73

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 Arg Leu Trp Asp Arg Ala Arg Arg Tyr Ala Ala Ala Leu Arg Gly Gln
 35 40 45
 Gly Ile Gly Pro Asp Asp Lys Val Ala Leu Leu Met Pro Asn Thr Pro
 50 55 60
 Glu Phe Ala Ala Val Tyr Phe Ala Val Leu Ala Leu Gly Ala Val Val
 65 70 75 80
 Val Pro Val His Thr Leu Leu Lys Pro Ala Glu Val Ser His Leu Leu
 85 90 95
 Arg Asp Ser Gly Ala Arg Ala Leu Val Trp Ala Gly Thr Leu Pro Gln
 100 105 110
 Glu Thr Ala Arg Asp Ala Gly Glu Thr Gly Val Leu Leu Leu Thr Val
 115 120 125
 Gly Glu Ala Leu His Gly Ser Val Leu Leu Asp Asp Gly Val Glu Pro
 130 135 140
 Ile Asp Thr Tyr Val Glu Arg Gly Ala Asp Asp Leu Ala Leu Val Leu
 145 150 155 160
 Tyr Thr Ser Gly Thr Thr Gly Arg Pro Lys Gly Ala Met Leu Thr His
 165 170 175
 Gly Asn Val Ala Thr Asn Ile Ala Val Thr Ala Val Ser Pro Phe Ala
 180 185 190
 Phe Gly Glu Asp Asp Val Leu Leu Gly Ala Leu Pro Leu Ser His Thr
 195 200 205
 Phe Gly Gln Ile Cys Gly Met Ala Val Thr Phe His Ala Gly Ala Thr
 210 215 220

Leu Val Val Met Glu Arg Phe Glu Ala His Asp Ala Leu Arg Leu Met
 225 230 235 240
 Arg Glu His Gly Cys Thr Val Phe Met Gly Val Pro Thr Met Tyr His
 245 250 255
 Ala Leu Leu Glu Ala Val Ala Ala Gly Ala Pro Ala Pro Arg Leu Thr
 260 265 270
 Arg Val Tyr Ser Gly Gly Ser Ala Leu Pro Val Pro Val Leu Asp Arg
 275 280 285
 Val Arg Ala Ala Phe Gly Cys Glu Val Tyr Glu Gly Tyr Gly Leu Thr
 290 295 300
 Glu Thr Ser Pro Cys Val Ala Tyr Asn Gln Pro Gly Ile Pro Cys Lys
 305 310 315 320
 Pro Gly Thr Val Gly Leu Pro Ile Asp Gly Val Arg Val Ala Ile Ala
 325 330 335
 Asp Ala Glu Leu Glu Gly Arg Ile Arg Leu Leu Lys Gln Gly Asp Ile
 340 345 350
 Gly Glu Ile Val Val Ser Gly His Asn Val Met Ala Gly Tyr Leu Gly
 355 360 365
 Arg Pro Gln Glu Thr Ala Glu Val Leu Val Asp Gly Trp Phe Arg Thr
 370 375 380
 Gly Asp Met Gly Val Gln Asp Glu Asp Gly Tyr Leu Ser Ile Val Asp
 385 390 395 400
 Arg Lys Lys Asp Met Ile Val Arg Gly Gly Tyr Asn Val Tyr Pro Arg
 405 410 415
 Glu Val Glu Asp Val Leu Leu Arg His Pro Ala Val Asp Gly Ala Cys
 420 425 430
 Val Val Gly Val Pro Ser Val Lys His Gly Glu Glu Val Cys Ala Val
 435 440 445
 Val Arg Val Lys Pro Gly Gln Arg Ala Ser Gly Leu Leu Ala Glu Glu
 450 455 460
 Ile Val Ala Trp Ser Arg Val His Met Ala Ala Tyr Lys Tyr Pro Arg
 465 470 475 480
 Arg Val Glu Phe Val Glu Thr Phe Pro Leu Gly Ser Ser Gly Lys Val
 485 490 495
 Leu Lys Arg Glu Leu Ala His Arg Tyr Ala
 500 505

<210> 74
 <211> 1521
 <212> DNA
 <213> Streptomyces aizunensis

<400> 74
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tacgccgccg ccctgcgcgg ccagggcac cggccccgacg acaaggtcgc gctgctgatg 180
ccgaacaccc cggagttcgc ggcgggtgtac ttcgcgggtgc tcgcgctcgg cgccgtcgtc 240
gtccccgtcc acaccctgct gaagcccgcg gaggtctcgc atctcctccg ggactcggga 300
gcgccccccc tcgtatgggc cgggacgctc ccgcaggaga ccgcacggga cgccggggag 360
accgggggtcc tgctcctgac cgtgggggag gccctgcacg gctccgtcct cctcgacgac 420
ggcgtcgagc ccatcgacac gtatgtcgag cggggggcgg acgacctcgc gctgggtgctg 480
tacacctccg gtacgacggg caggccgaag ggggcgatgc tcacgcacgg caacgtcgcg 540
acgaacatcg ccgtgaccgc cgtgtcccc ttcgccttcg gcgaggacga cgtgctgctc 600
ggcgcgctgc cgctgtcgca caccttcggc cagatctgcg ggatggccgt caccttccac 660
gcggggcgga cgctggtggt catggagcgc ttcgaggcgc acgacgcct gcggctgatg 720
cgcgageacg gctgcacggc cttcatgggc gtgccgacca tgtaccacgc gctgctcгаа 780
gcggtcgcgg ccggcgcccc ggcgcgcgc ctcaccgcg tgtacagcgg tgggtcggct 840
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ccgggcacgg tggggctgcc catcgacggc gtacgggtcg ccatcgccga cgcggagctg 1020
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aacgtgatgg cgggctacct cggccggccg caggagaccg ccgaggact ggctcgacggc 1140
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cggaagaagg acatgatcgt ccgcgggtggc tacaacgtct acccccgca ggtggaggac 1260
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cacggcgagg aggtgtgcgc cgtggtccgg gtgaagcccc gtcagcgcgc gagcggctc 1380
ctcgcggagg agatcgtggc ctggagccgg gtgcacatgg cggcctaaa gtaccgcgc 1440
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ctggcacacc gctacgcgtg a 1521

<210> 75
<211> 217
<212> PRT
<213> Streptomyces aizunensis

<400> 75

Val Pro Thr Arg Thr Val Glu Glu Asp Ile Glu Ile Val Leu Ile Val
 1 5 10 15
 Arg Asp Asp Met Arg Arg Tyr Gly Val Glu Gly Met Cys Arg Ser Leu
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 Asp Thr Pro Val Glu Ala Gln Ser Tyr Ala Asp Phe Asp Asp Leu Asp
 35 40 45
 Pro Phe Ser Gly Gly Gln Leu Val Ile Leu Ser Ser Asp Ala Ala Gly
 50 55 60
 Pro Leu Ser Ala Glu Thr Ala Glu Ser Leu Arg Thr His Glu Ile Pro
 65 70 75 80
 Val Leu Ile Leu Val Asp Ser Ala Ala Pro Val Glu Gln Ser Trp Ala
 85 90 95
 Asp Gln Ala Arg Gly Phe Leu Asp Trp Ala Asp Leu Arg Pro Asp Thr
 100 105 110
 Leu Arg Asp Ala Ile Ala Asp Val Ala Ala Gly Arg Phe Phe Ala Ser
 115 120 125
 Glu Thr Leu Ala Arg Arg Ser Val Thr Ala Ala Glu Gln Thr Glu Gly
 130 135 140
 Gly Thr Pro Ala Ala Arg Ser Pro Ile Thr Leu Thr Ala Arg Glu Leu
 145 150 155 160
 Gln Val Leu Arg Leu Ile Ala Gly Gly Leu Ser Asn Arg Gln Ile Ala
 165 170 175
 Arg Ser Leu Asn Ile Ser Glu His Gly Val Lys Arg Leu Val Gly Ile
 180 185 190
 Val Leu Ala Lys Leu Asn Cys Pro Asn Arg Thr Leu Ala Val Val Arg
 195 200 205
 Ala Ile Asp Ala Gly Leu Leu Thr Leu
 210 215

<210> 76
 <211> 654
 <212> DNA
 <213> Streptomyces aizunensis

<400> 76
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 cggcgctatg gcgtcgaggg aatgtgccgt tgcctggaca cccccgtcga ggcgcagtcc 120
 tacgcgatt tcgatgatct cgacccttc tccggaggcc agttggatcat cctctccagt 180
 gatgcgggcg gtcccctctc cgccgagacc gccgaaagcc tgcggacgca tgagataccc 240
 gtgctgatcc tggctgactc ggccgccccg gtcgagcagt cctgggcccga ccaggcgcgc 300
 ggcttctctgg actgggcgga tctgcgcccc gacaccttgc gcgacgcgat cgccgatgtg 360

gcggccgggc gcttcttcgc gtcggagacc ttggcgcggc gctccgtgac ggcggcggag 420
cagacggagg gcggaacgcc cgcggcgcgg agcccgatca cgctgacggc gcgtgaactc 480
caggtcctgc gcctgatcgc gggcggctctg agcaatcggc agatcgcgcg gtcgctgaac 540
atctccgagc acggtgtcaa acgcttggtc gggatcgtcc tggccaagct caactgtccg 600
aaccgcacgc tcgccgtggt ccgtgccatt gacgcgggtc tcctcacctt gtga 654

<210> 77
<211> 442
<212> PRT
<213> Streptomyces aizunensis
<400> 77

Met Thr Lys Asn Gln Glu Pro Arg Asp Pro Ser Gly Thr Arg Pro Arg
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Lys Ala Ala Ala Ser Gly Lys Pro Ser Leu His His Ala Val Pro Pro
20 25 30
Thr Gly Pro Gly Gly Pro Pro Ala Ala Ala Asp Ser Gln Ile Thr Leu
35 40 45
Arg Ser Pro Ala Glu Leu Ala Asp Ala Leu Pro Tyr Met Leu Gly Phe
50 55 60
His Pro Thr Asp Ser Leu Val Met Val Ala Leu His Gly Glu Gly Gly
65 70 75 80
Arg Phe Gly Gly Arg Leu Arg Val Gly Ile Pro Thr Asp Arg Gly Glu
85 90 95
Trp Glu Asp Thr Ala Arg Gln Val Ala Asp Cys Leu Val His Gly Ser
100 105 110
Glu Arg Arg Gly Gly Lys Pro Asp Gly Ile Val Val Phe Leu Cys Gln
115 120 125
Asp Pro Arg Gly Gly Glu Ser Gly Gln Arg Val Met Thr Arg Leu Arg
130 135 140
Pro Leu Ala Gln Arg Ile Arg Leu Ala Cys Gly Ala Leu Asp Val Pro
145 150 155 160
Val Leu Glu Ala Leu Cys Leu Ser Gly Gly Arg Tyr Trp Ser Tyr Cys
165 170 175
Cys Pro Asp Ala Arg Cys Cys Pro Ala Glu Gly Thr Ala Leu Thr Val
180 185 190
Pro Gly Thr Ser Val Met Ala Ala Ala Ala Thr Tyr Ala Gly Leu Arg
195 200 205
Val Arg Gly Ser Leu Gln Glu Ile Glu Gly Arg Leu Ala Pro Leu Arg
210 215 220

Gly Pro Leu Ala Asp Glu Gln Glu Arg Ser Leu Asp Leu Ala Ala Thr
 225 230 235 240
 Ala Leu Val Pro Lys Ile Leu Asp Gly Ala Thr Arg Glu Asp Val Gly
 245 250 255
 Ala Asp Thr Leu Glu Leu Ala Arg Thr Leu Met Arg Arg Leu Thr Leu
 260 265 270
 Ala Pro Pro Ala Asp Gly Gly Pro Cys Ala Glu Asp Trp Asp Asp Ala
 275 280 285
 Leu Leu Gly His Asp Glu Ala Ala Ser Leu Ile Leu Gly Leu Gln Asp
 290 295 300
 Arg Glu Ile Arg Asp Ile Ala Ala Glu Trp Met Glu Gly Glu Glu Ala
 305 310 315 320
 Ala Pro Ala Leu Arg Leu Trp Arg Ala Leu Ala Arg Arg Cys Val Gly
 325 330 335
 Ala Tyr Gly Glu His Ala Ala Ala Pro Leu Thr Leu Ala Gly Trp Val
 340 345 350
 Ser Trp Ser Thr Gly Asp Glu Pro Thr Ala Arg Ile Ala Leu Gly Met
 355 360 365
 Ala Leu Arg Ala Asp Ala Asp Tyr Arg Phe Ala Gln Leu Leu His His
 370 375 380
 Ala Cys Asn Glu Gly Ile Asp Pro Glu Gly Leu Arg Glu Cys Leu Arg
 385 390 395 400
 Ala Glu Arg Gly Arg Arg Glu Pro Arg Arg Ala Arg Ala Ala Val
 405 410 415
 Thr Arg Pro Pro Gly Arg Arg Pro Arg Thr Thr Arg Pro Ala Pro Arg
 420 425 430
 Asp Arg Arg Arg Thr Ala Gly Ser Glu Gln
 435 440

<210> 78

<211> 1329

<212> DNA

<213> *Streptomyces aizunensis*

<400> 78

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 gccgccgact cacagatcac cctgcgcagc cggccgaac tggccgacgc cctgccctac 180
 atgctcggct tccaccgac cgactcctc gtcattggtcg cctgcacgg cgaggaggc 240
 cgcttcggcg gccggctgcg ggtcggcatt cccaccgacc ggggggagtg ggaggacacc 300
 gcccggcagg tcgccgactg cctggtgcac ggcagcgaac ggcgcggcgg caagcccgac 360

ggcatcgtcg tcttctctg ccaggacccg cgcggcgggg agagcgggca gcgggtgatg	420
accgggtgc gcccgctcgc ccagcgcac aggctcgcct gcggagcgct ggacgtgccc	480
gtgctggagg cgctgtgcct ctccggcggc cggtagtggt cctactgctg ccccgacgcg	540
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gcgctcgtac cgaagatcct cgacggagcc acccgggagg acgtgggcgc ggacacctg	780
gaactcgcgc ggacctgat gcgggcctc accctcgcgc cggccgccga cggcgggccc	840
tgcgccgagg actgggacga cgcgctcctc ggacacgacg aggcggcctc cctcatcctc	900
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